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ONE DOSE ALUM TOXOID IN DIPHTHERIA IMMUNIZATION

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Immunization against diphtheria has in recent years received more attention from pediatricians and health workers than any other phase of preventive medicine. Within the last year there has come into general use a new method which, because it has the great advantage of requiring only one injection, promises to displace all other methods of accomplishing such immunization. Much has been written by laboratory and health workers on the use of a single dose of alum toxoid, but little if any of this has appeared in the pediatric literature, and yet it is the practicing physician and especially the pediatrician who in the final analysis is most interested. It is for this reason, and in the hope of stimulating enough interest to secure the necessary clinical evaluation, that I take this opportunity for discussing the new method.

Since the days of von Behring, who first neutralized diphtheria toxin with antitoxin in order to immunize animals safely and then applied this method to man, there has been an unbroken sequence of developments to improve and perfect the technic of the immunizing process. The ideal method of artificial immunization against an infectious disease should meet four specifications: (1) The number of treatments should be reduced to a minimum, (2) the period for the development of immunity should approximate that of the incubation period of the disease, (3) the injection should be safe with little or no disagreeable reaction, and (4) the method should be as nearly perfect as possible in effecting lasting immunity. The vast amount of work that has gone before has adhered always to this ideal.

The central fact in all immunizations against diphtheria is that it is the toxin that immunizes; but to be effective its toxicity must be reduced or so modified that it can be given without danger. The old toxin-antitoxin, which contained relatively large amounts of toxin (3 L +), neutralized with three and one-half units of antitoxin, proved to be unsatisfactory chiefly because its use was followed by frequent severe local and general reactions. To overcome this difficulty, Park and Zingher experimented with preparations containing less toxin and finally devised a mixture containing 0.1 L + of toxin and 0.75 unit of antitoxin. With this mixture the reactions were very much less severe than with the older preparations and the immunity obtained just as satisfactory.

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It has long been observed that diphtheria toxin deteriorates with time; it loses both toxicity and the power to neutralize antitoxin. Fortunately, however, toxicity is lost much faster than combining power. The discovery of this fact led to the idea of modifying diphtheria toxin by physical means in such a manner that its toxic effects are reduced while a relatively large amount of the specific antigen is retained. Working along these lines, Glenny and associates in England found that the addition of 0.1 per cent formaldehyde to toxin rendered it nontoxic without material loss of its antigenic properties. Then in this country Park and his co-workers, promptly grasping the importance of this, injected a large group of school children with a toxoid that was made by adding 0.1 per cent of formaldehyde and then incubating at 37 C. for five weeks. Much of the work that followed was based on these experiments.

In the meantime it has been noted by many workers that the small amount of horse serum present in the old toxin-antitoxin mixture occasionally resulted in sensitization to horse serum, and in order to obviate this danger an antitoxin prepared with goat serum was used for neutralization of the toxin. While these preparations were effective in from 70 to 75 per cent of cases, it was realized that it would be a distinct advantage to use a preparation that contained no foreign proteins in the form of animal serum, and this stimulated the search for a preparation that could be detoxified by a combination of chemical and physical means. Larson developed a toxoid that had been detoxified by the addition of sodium ricinoleate, and for a time this preparation seemed in certain parts of the country to give satisfactory results. For one reason or another, however, Larson's mixture never came into general use, and the search has continued.

While all these agents were fairly satisfactory in producing a negative Schick test, each had its disadvantage. The old toxin-antitoxin was unstable and under certain conditions could become highly toxic. In addition, in order to accomplish the best results, it was necessary to give three injections. The desirability of reducing the number of injections to a minimum and at the same time of increasing the antigenic response led to the production of a toxoid of high antigenic potency detoxified by aging with the addition of formaldehyde. This anatoxin or toxoid, which was developed by Ramon, was given in two injections at an interval of from two to four weeks. It was effective in producing immunity in about 80 per cent of the children in three months and in from 90 to 100 per cent in six months. This proved to be an important forward step, for the immunization was from 20 to 30 per cent more effective, no sensitizing serum was present, the preparation was more stable, and the reactions were not objectionable. Until approximately one year ago, this was the preparation of choice.

Ramon, while endeavoring to improve the antigenic properties of his toxoid, observed in 1925 an increased antitoxin production in horses that developed abscesses at the site of injection. In the effort to slow down the rate of absorption he conceived the idea of adding tapioca to toxoid, whereupon he obtained a marked increase in antigenic stimulation. With the same object in view, Glenny and his associates used alum in various concentrations and found this to be very effective. Following this work, Park and his associates added 0.2 per cent of alum to their toxoid and proved that the immunity response in both guinea-pigs and children was markedly increased. They considered it necessary, however, to give at least 0.5 cc. in three injections at weekly intervals, with which technic they obtained negative Schick tests in approximately 99 per cent of known positive reactors. This increased efficiency Park attributed to lessened solubility of the toxoid with correspondingly slow absorption.

A little later, Glenny and Barr [1] described the complete precipitation of toxoid by from 1.5 to 2 per cent solution of alum and found a marked increase in antitoxin formation in horses. Following this work they stated that it appeared possible by this method to produce a product that would in a single injection immunize human beings beyond the Schick level of immunity. Following this suggestion, Havens and his co-workers [2] of the Alabama State Health Department prepared a toxoid that was more or less completely precipitated by the addition of 2 per cent alum. It was found that between 75 and 80 per cent of the specific antigen remained in the precipitate thus prepared and that from 50 to 75 per cent of the extraneous nitrogenous products were eliminated in the filtrate. This precipitate was further purified by washing with salt solution, in which vehicle it was later suspended and standardized to contain ten plus flocculation units per cubic centimeter. When injected in guinea-pigs this agent, as was verified by Harrison [3] of the National Institute of Health, was found to be from twenty to fifty times more effective than soluble toxoid in producing antitoxin.

The developments in the field of immunology which I have just sketched were based largely on experiments with the lower animals. That which follows deals with the human subject, and notably with work done in Alabama. In the fall of 1931, following his earlier experiments, Havens gave to each of a group of children from 6 to 10 years of age, all strongly Schick positive, 1 cc. of alum precipitated toxoid with from five to ten flocculation units. He found that the immunity response as measured by the Schick test was as good after this one dose as had heretofore been obtained from two or three injections of any other preparation. Since the results were slightly better with the higher unitage, the standard of ten plus flocculation was adopted. This represents an epoch marking advance in diphtheria immunization.

The increase thus seen in the effectiveness of one dose is not difficult to explain. It lies apparently in the fact that precipitated toxoid is relatively insoluble and therefore is absorbed slowly. Slow absorption means that less antigen is lost by excretion and, as was shown to be true by Glenny, Buttle and Stevens,[4] that it remains in the tissues long enough to act as its own secondary stimulus to antitoxin production. The application of this principle has been demonstrated also by Straus,[5] who incorporated a concentrated toxoid of high antigenic potency in hydrous wool fat and with a single dose obtained 99 per cent effectiveness in a small series of children.

Subsequently, further tests of this immunizing agent were made on larger groups of children by Graham, Murphree and Gill,[6] with equally good results. Confirmatory evidence was obtained by McGinnes in Virginia, who used the precipitated toxoid prepared in the laboratories of the Alabama State Health Department. In the spring of 1933 the National Institute of Health put its stamp of approval on this product, and its manufacture was started by the commercial biologic laboratories. Since that time many thousand children have received the alum precipitated toxoid according to the technic of Havens and numerous health departments throughout the country are now using it as their standard method of immunization. The advantages of using a preparation requiring only one injection are obvious, especially when used for mass immunizations.

Dr. W. H. Park [7] introduced the use of alum precipitated toxoid in the public schools of New York City beginning in February 1934 and found that the one dose conferred immunity in from 90 to 95 per cent of susceptible children. In a later communication (April 7) he tells me that after nine weeks he obtained 87 per cent negative reactions in a series of sixty-nine children aged from 6 months to 3 years and that he is of the opinion that more than 95 per cent would react negatively a little later. In an address before a joint meeting of the Philadelphia Pediatric Society, the New England Pediatric Society and the Pediatric Section of the New York Academy of Medicine, Dr. Park [8] stated that the effect of alum precipitated toxoid was more than double that of toxoid in fluid form and that it was rapidly displacing all other methods of immunization. Baker and Gill [9] reported the results obtained in more than 16,000 immunizations.

Untoward reactions are few. Park [7] states that he found practically no reactions in children under 2 years of age but that older children occasionally showed some disturbance; this was not sufficiently marked, however, to be seriously objectionable. Others have reported sterile abscess formation. Why this should occur, I am unable to say. On the whole, reactions are so rare and mild that they may be disregarded.

My personal experience with alum precipitated toxoid started in February 1933, when my colleagues and I received a supply of this material from the Alabama State Board of Health. It was used by us in our private practice in the age group from 6 to 18 months, which, as is well known, is the ideal age for the immunization and the age at which the immunity response is best. There were 135 infants in this series who were given 1 cc. of alum precipitated toxoid without a preliminary Schick test. None of this group had a reaction other than an occasional slight induration.

1. Glenny, A. T., and Barr, M.: J. Path. & Bact. **34:** 131 (March) 1931.

2. Wells, D. M.; Graham, R. H., and Havens, L. C.: Diphtheria Toxoid Precipitated with Alum: Its Preparation and Advantages, Am. J. Pub. Health **22:** 648 (June) 1932.

3. Harrison, cited by G. W. McCoy in personal communication to J. N. Baker.

4. Glenny, A. T.; Buttle, G. A. H., and Stevens, Muriel, F.: J. Path. & Bact. **34:** 267 (March) 1931.

5. Straus, H. W.: Active Immunization Against Diphtheria: A Rapid Method with a Single Injection, J. A. M. A. **101:** 192 (July 15) 1933.

6. Graham, A. H.; Murphree, L. R., and Gill, D. G.: Diphtheria Immunization with a Single Injection of Precipitated Toxoid, J. A. M. A. **100:** 1096 (April 8) 1933.

7. Park, W. H.: Personal communication to the author.

8. Park, W. H.: A Consideration of the New Preparation of Diphtheria Toxoid, abstract of an address before the Philadelphia Pediatric Society, New England Pediatric Society and New York Academy of Medicine, Section of Pediatrics, Am. J. Dis. Child. **47:** 929 (April) 1934.

9. Baker, J. N., and Gill, D. G.: Am. J. Pub. Health. **24:** 22 (Jan.) 1934.

All received the Schick test in from two to six months and all reacted negatively.

In the Employees' Hospital of the Tennessee Coal and Iron Railroad Company, alum toxoid was given in one injection to 170 Schick positive children aged from 7 to 12 years. One hundred and sixty-five of these children were retested in four or five months and all reacted negatively. In another group of children who received no preliminary Schick test the result was a 100 per cent negative reaction in from two to five months. Of these, 1,095 were infants under 1 year of age, of whom 770 were tested. In the age group from 1 to 6 there were 1,353, of whom 992 were tested. There were twenty-nine in the age group from 7 to 12, of whom twenty-seven were tested. Although these results were comparable to those obtained by others, it was felt that the total lack of positive reactors might be in part due to a deficiency in the potency of the toxin used for the tests. In all instances the toxin used was a stable peptone preparation supplied by the state board of health, and when this question arose it was retested and was found to conform to all tests for potency. Further tests were made on nonimmune children, who gave satisfactorily positive reactions.

TABLE 1.—*Results Obtained with Alum Toxoid at the Tennessee Coal and Iron Railroad Company Employees Hospital, Fairfield, Ala.*

	Age			
	Under 1 Year	1 to 6 Years	7 to 12 Years	Total
Susceptibles, Schick positive previous to immunization				
Alum toxoid	...	...	165	
Schick negative (from four to five months later)	...	...	165	
No preliminary Schick tests given				
Alum toxoid	770	992	27	1,789
Schick negative (from two to five months later)	770	992	27	1,789

The department of preventive medicine and public health of Vanderbilt University School of Medicine was furnished with a supply of alum precipitated toxoid by the Alabama State Board of Health. Under the direction of Alvin E. Keller,[10] children from two institutions close to Nashville, Tenn., were each given a Schick test and the positive reactors were given 1 cc. of the toxoid. In order to determine how soon immunity resulted, the children were given another Schick test at different intervals, beginning two weeks after the injection. In one group of twenty-three Schick positive children, 60 per cent were negative in fourteen days. In the same group, 95.6 per cent were negative in twenty-eight days and 100 per cent in forty-two days after the injection. In another group of fifty-three children, 92.4 per cent were Schick negative twenty-two days after receiving the injection, 94.3 per cent were negative in sixty days, and 96.2 per cent were negative in ninety days. In another group of eight children, every one was negative one month after injection.

TABLE 2.—*Results Obtained with Alum Toxoid at the Vanderbilt School of Medicine, Department of Preventive Medicine*

	Per Cent Schick Negative After					
	14 Days	22 Days	28 Days	42 Days	60 Days	90 Days
Group 1 (23 Schick +)	60	95.6	...	100		
Group 2 (53 Schick +)	..	92.4	...	...	94.3	96.2
Group 3 (8 Schick +)	..	....	100			

Keller states that the results following immunization with a single dose of alum precipitated toxoid compare favorably with those obtained with two doses of toxoid and are much better than those reported following three injections of standard diphtheria toxin-antitoxin.

In an effort to determine whether the immunity conferred by this method was a lasting one, Gill,[11] within the month, has retested forty of the original group who were each given the toxoid two years ago and found one who gave a slight positive reaction while the others were all negative. All these children were strongly Schick positive before receiving the toxoid and all had reacted negatively following the injection. It is suggested that further tests be made on larger groups in order to determine this question definitely.

Painstaking animal experiment and careful clinical observation throughout the years from von Behring's day to the present time have enhanced enormously the efficiency of efforts toward the production of artificial immunity against diphtheria. The culmination of all this is seen in the achievement of Havens and others, who, by means of a single injection of a newly devised toxoid mixture, have succeeded in producing immunity in a surpassingly high percentage of susceptible children.

Highland Plaza Apartments.

10. Keller, A. E.: Personal communication to the author; to be published.

11. Gill, D. G.: Personal communication to the author.

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DIFFICULTY IN SWALLOWING IN ACUTE EPIDEMIC POLIOMYELITIS

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At the beginning of the paralytic stage of poliomyelitis, many patients with paralysis of the lower cranial nerves have difficulty in swallowing. This condition is seen more frequently in the hospital than in private practice. This may be because inability to swallow is an alarming symptom and, when it occurs, the parents request hospitalization for the patient. One of the questions we were frequently asked was whether the patient would be able to swallow again. Based on our experience in the past, we always gave a good prognosis. However, when some of the patients were unable to swallow week after week, we turned to the literature for information. The available data on the subject were very meager and for that reason we present our observations.

During the period from July 1 to Dec. 1, 1933, there were 123 patients with cranial nerve lesions due to poliomyelitis admitted to the Willard Parker Hospital. Among these 123 patients, difficulty in swallowing occurred in 87. The condition was observed in the hospital in eighty-one and noted in the history of six others. In most patients the difficulty in swallowing occurred before the fourth day of the illness, but in some it was not observed until the eighth day. The condition cleared up in the majority of our patients in

a week. However, there were five patients who were of particular interest, because they were unable to swallow for twenty-one, twenty-five, thirty-five, fifty-one and seventy-one days, respectively, and they will be considered in detail later.

SEX AND AGE

In the entire group of 123 patients with bulbar lesions there were seventy-nine males and forty-four females. Of these, fifty-nine males (75 per cent) and twenty-eight females (64 per cent) had difficulty in swallowing, indicating a slightly higher rate of incidence among the males who had bulbar lesions.

TABLE 1.—*Percentage of Bulbar Cases with Difficulty in Swallowing, According to Age*

Age	Number of Bulbar Cases	Cases with Difficulty in Swallowing	
		Number	Per Cent
1	1	0	0
2	6	1	17
3	12	5	42
4	7	4	57
5	13	12	92
6	10	8	80
7	18	10	56
8	10	8	80
9	8	6	75
10	10	8	80
11	6	4	66
12	6	6	100
13	2	2	100
14	3	2	66
15	3	3	100
16	3	3	100
18	2	2	100
19	1	1	100
33	1	1	100
38	1	1	100

The youngest patient was 2 years of age and the oldest 38. The average age was 9 years. It was interesting to note that the older the patient with cranial nerve lesions, the more likely he was to have difficulty in swallowing. This tendency is shown in table 1, in which the number and percentage of bulbar cases with difficulty in swallowing is given according to the ages of the patients.

TABLE 2.—*Duration of Difficulty in Swallowing*

Days	Number of Patients	Days	Number of Patients
1	3	12	0
2	9	13	1
3	4	14	0
4	9	15	1
5	9	16	1
6	5	17	1
7	8	21	1
8	4	25	1
9	0	35	1
10	1	51	1
11	1	71	1

TIME FACTORS

Most of the patients were again able to swallow practically normally in a week (table 2). Ten patients continued to have difficulty in swallowing for from eight to seventeen days and five were unable to swallow for more than seventeen days. The average duration was seven days.

There was no correlation between the day of the illness that difficulty in swallowing began and its duration. Neither was there any correlation between the number of cranial nerves involved and the duration of the difficulty in swallowing.

PHYSIOLOGY

A brief consideration of some of the important points of the physiology of deglutition will suffice to show that it is a rather complex performance.[1] Part of the act of deglutition is voluntary and part is involuntary. In general it is divided into three stages:

The first stage consists of the passage of the bolus of food between the anterior pillars of the fauces (isthmus of the fauces). This part of the act is usually ascribed to the movement of the tongue itself. The bolus of food lying on the upper surface of the tongue is forced backward by the elevation of the tongue against the soft palate.

The second stage comprises the passage of the bolus from the isthmus of the fauces to the esophagus; i. e., its transit through the pharynx. The mylohyoid muscle quickly contracts and the bolus of food put under pressure is shot into and through the pharynx. The contraction of the mylohyoid muscle marks the beginning of the second stage, the first event of which is that the bolus, by stimulating sensory nerve ends, acts on the nerve centers situated in the medulla oblongata, so as to cause a coordinated series of movements of the muscles of the pharynx and larynx and an inhibition for a moment of the respiratory center. The mouth cavity is shut off by the position of the tongue against the palate and by the contraction of the muscles of the anterior pillars of the fauces. The opening into the nasal cavity is closed by the elevation of the soft palate (action of the levator palati and tensor palati muscles) and by the contraction of the posterior pillars of the fauces (palatopharyngeal muscles) and the elevation of the uvula (azygos uvulae muscles). The soft palate, uvula and posterior pillars thus form a sloping surface, shutting off the nasal chamber and facilitating the passage of the food backward through the pharynx. The respiratory opening into the larynx is closed by the adduction of the vocal cords (lateral crico-arytenoids and constrictors of the glottis) and by the strong elevation of the entire larynx and a depression of the epiglottis over the larynx (actions of the thyrohyoids, digastrics, geniohyoids and mylohyoids and the muscles in the aryteno-epiglottidean folds).

The third stage is the passage of the food through the esophagus. When the food is solid or semisolid it is forced down the esophagus by a peristaltic movement of the musculature. The contraction of the esophageal muscles is the motor response of a reflex initiated in the mucous membrane of the pharynx and esophagus. The afferent nerves concerned in this reflex include branches of the glossopharyngeal (ninth), trigeminal (fifth) and vagus (tenth). The motor fibers concerned in the reflex comprise the hypoglossal (twelfth), trigeminal (fifth), glossopharyngeal (ninth), vagus (tenth) and the spinal accessory (eleventh) nerves.

The afferent fibers in the glossopharyngeal nerve exercise a powerful inhibitory influence on the center of deglutition as well as on that of respiration. When the glossopharyngeal nerves are cut the esophagus enters into a condition of tonic contraction, which may last a day or so.

When the act of deglutition depends on so many muscles and cranial nerves it is not surprising that difficulty in swallowing is experienced by many patients with the bulbar type of poliomyelitis.

1. The description of the physiology of deglutition has been condensed from chapters on this subject in a Text-Book of Physiology, by William H. Howell (Philadelphia, W. B. Saunders Company, 1919), and Physiology and Biochemistry in Modern Medicine, by J. J. R. Macleod (St. Louis, C. V. Mosby Company, 1928).

CLINICAL CLASSIFICATION

Clinically the patients presented several different types of difficulty in swallowing. They fell more or less into four groups:

1. Regurgitation through the nose due to paralysis of the soft palate.

2. Accumulation of food in the throat associated with a sensation of fulness. The food was either regurgitated or swallowed very slowly. We thought this was due to paralysis of the pharyngeal muscles, but, after studying the physiology more carefully, we think it was probably a result of paralysis of the mylohyoid or other muscles associated with the second stage of deglutition.

3. Small amounts of food swallowed with difficulty and then vomited, which may have been due to pharyngeal or esophageal muscle paralysis.

4. Coughing when an attempt was made to swallow, being due to failure to close off the larynx, the result of paralysis either of the vocal cords or of the muscles that elevate the larynx (thyrohyoids, digastrics, geniohyoids and mylohyoids).

Those patients who choked or coughed when they attempted to swallow and those who were unable to swallow their saliva (group 4) received fluids subcutaneously, intravenously and rectally. After several days, gavage was tried. If the fluid was retained, either the gavage was repeated or the patient was fed through a Levin tube. We found the latter a most satisfactory way of feeding patients with prolonged inability to swallow. We did not use continuous venoclysis [3] but think it would be a helpful addition in the treatment. When necessary, postural drainage was instituted and secretions that accumulated in the pharynx were removed by suction. We have used postural drainage (foot end of bed elevated and patient's head turned to the side) in these cases with considerable success for several years.

It may be necessary to tilt the bed from 15 to 20 degrees. Murphy [4] experimented with curarized cats kept alive in a Drinker respirator. He found that, when the cats were tilted head down at an angle of 15 degrees with the horizontal, fluid dropped into the trachea was not aspirated into the lungs. Durand [5] suggested tying the patient's feet to the end of the bed to permit adequate tilting.

TABLE 3.—*Late Results in Five Patients with Prolonged Inability to Swallow*

Patient, Case Number	Sex	Age in Years	Type of Polio-myelitis	Duration of Inability in Swallowing	Follow Up				
					Time in Months	Excessive Saliva and mucus	Voice	Swallowing	Comment
M. H. 1	♂	33	Bulbar	51 days	4½	++	Husky, nasal	Swallowed well but had to be done slowly at times	Slight left facial and palatal paralysis; diminished expansion of right chest with dulness and moist râles (the patient died of pulmonary tuberculosis 2 months after the follow up examination)
H. W. 2	♂	3	Bulbar	71 days	3½	+	Husky, speech indistinct	Normal	Movement of palate sluggish; few rhonchi and coarse moist râles
D. F. 3	♂	19	Bulbar	35 days	5	Slight	Slightly husky	Normal	Slight asymmetry of palate; gained 20 pounds
M. B. 4	♀	9	Bulbo-spinal	• 27 days	6	+	Husky, nasal	Normal	Paralysis of intercostal muscles and diaphragm; left facial and palatal paralysis
P. G. 5	♀	8	Bulbo-spinal	21 days	5½	Slight	Slightly husky	Normal	No residual paralysis

Difficulty in swallowing associated with choking or vomiting, when occurring in a patient with respiratory distress, is of especial importance. There is a marked tendency to aspiration of fluid (vomitus or saliva) in patients with a diminished cough reflex due to respiratory embarrassment, and the tendency is increased by treatment in a respirator.[6] Feeding by mouth (including gavage) is contraindicated for these patients until they are able to take food without untoward results.

Sedatives (one of the barbital compounds) were administered when necessary. No other medication was used.

PROLONGED INABILITY TO SWALLOW

Based on our previous experience and that of all writers who have commented on the subject, we thought that the difficulty in swallowing due to poliomyelitis lasted for from a few days to a few weeks.

Six patients were extremely drowsy or stuporous, owing to an associated encephalitis or toxemia. Which group, if any, these would fall into we were not able to determine.

Our clinical classification is admittedly crude, but the diagnostic criteria at our disposal precluded a more accurate localization of the lesions present.

TREATMENT

The treatment that the patients received varied according to their clinical classification. Those who had nasal regurgitation (group 1) were fed semisolid food or, if necessary, a gavage was given. Approximately one third of the patients did not require gavage. For patients who regurgitated or vomited after attempting to swallow (groups 2 and 3), gavage was given, or, if the condition lasted several days, they were fed through a Levin tube.[2] This is a rubber tube about 45 inches long with a velvet eye at the terminal end similar to that in a urethral catheter. There is no metal bucket attachment. There are oval openings on the side at the terminal end. The tube comes in three sizes, 16, 14 and 10 French. The thickness of the rubber is the same as that of a urethral catheter. The tube was originally designed for obtaining specimens of gastric and duodenal contents for examination. Levin advised that the tube be passed through the nose.

2. Levin, A. L.: A New Gastroduodenal Catheter, J. A. M. A. **76:** 1007 (April 9) 1921.

3. Friedmann, M.: Ueber intravenöse Dauerinfusion, München. med. Wchnschr. **60:** 1022 (May) 1913. Titus, Paul, and Dodds, Paul: An Apparatus for Regulating the Rate of Flow and the Temperature of Intravenous Injections of Dextrose (*d*-Glucose) and Other Solutions, J. A. M. A. **91:** 471 (Aug. 18) 1928.

4. Murphy, D. P.: The Influence of Posture upon the Movement of Fluid in the Trachea of the New-Born, Am. J. Obst. & Gynec. **27:** 118 (Jan.) 1934.

5. Durand, J. L.: Postural Treatment of Bulbar Infantile Paralysis, J. A. M. A. **93:** 1044 (Oct. 5) 1929.

6. Brahdy, M. B., and Lenarsky, Maurice: Treatment of Respiratory Failure in Acute Epidemic Poliomyelitis, Am. J. Dis. Child. **46:** 705 (Oct.) 1933. Harper, P., and Tennant, R.: Treatment of Respiratory Failure in Poliomyelitis, Yale J. Biol. and Med. **6:** 31 (Oct.) 1933.

During the past three years 1,334 patients with poliomyelitis were admitted to the Willard Parker Hospital. As far as we can recall, no patient had difficulty in swallowing beyond the period of isolation, which is twenty-one days. This is to a great extent consistent with the response of bulbar lesions in general. The majority of them either progress rapidly to cause the death of the patient or improve in a short time. Durand [5] found that paralysis of the muscles of deglutition generally cleared up in from a few days to two weeks. Shambaugh, Harrison and Farrell [7] also noted that paralysis of deglutition cleared up quickly and completely in a short time. Peabody, Draper and Dochez [8] state that "while the situation (inability to swallow) appears at the time to be most serious, the tendency to recover seems to be much better than one would expect, and return of function may take place even after ten days of paralysis." In view of this unanimity of opinion we were greatly interested in the course of five patients who were unable to swallow for from three to ten weeks (table 3).

In three of the five patients, respiratory difficulty developed which was sufficiently severe to require treatment in a respirator. One of these three patients (patient 1) was in the respirator for eight hours during the night, and the following morning no paralysis of the respiratory muscles could be made out. He was acutely ill with an elevated temperature for five days. The other two patients (patients 4 and 5) had paralysis of the diaphragm and weakness of the intercostal muscles. Both recovered after several days of artificial respiration in a respirator. They had difficulty in swallowing for twenty-one and twenty-seven days, respectively.

The fourth patient was a youth, aged 19, who had prolonged periods of hyperpyrexia for which we found no satisfactory explanation. When he was admitted to the hospital he was aphonic, had paralysis of the soft palate and was unable to swallow. During the first few days he was delirious at times. His breathing was frequently jerky, irregular and shallow, suggesting some injury to the respiratory center. He was not placed in a respirator and gradually improved. On the thirty-sixth day of his illness he began to swallow and retain food.

The fifth patient (patient 2), the youngest in this group, was 3 years of age. He was unable to swallow for seventy-one days, even though the paralysis was not as widespread as in some of the other patients. Except for two days the child received his fluids and nutriment for a month either intravenously, subcutaneously or rectally. During this time the child weathered a bilateral pneumonia.

The patients with prolonged difficulty in swallowing were reexamined several months after discharge from the hospital. The details are given in the abstracts of the case records. In general, the patients experienced some slight difficulty in swallowing for a month or two after going home. All of them were able to swallow well after three months. Some complained of an increased susceptibility to colds. Excessive salivation or accumulation of more than the usual amount of saliva and mucus in the mouth and pharynx was usually present. In our youngest patient this may have interfered with his speech. Huskiness of the voice was noticed in all the patients and a nasal twang in three. Some residual muscle weaknesses were present in four of the patients.

7. Shambaugh, G. E. Jr.; Harrison, W. G. Jr., and Farrell, J. I.: Treatment of the Respiratory Paralysis of Poliomyelitis in a Respiratory Chamber, J. A. M. A. **94**: 1371 (May 3) 1930.

8. Peabody, F. W.; Draper, George, and Dochez, A. R.: A Clinical Study of Acute Poliomyelitis, Monograph 4, Rockefeller Institute for Medical Research, 1912.

ABSTRACT OF CASES PRESENTING PROLONGED DIFFICULTY IN SWALLOWING

CASE 1.—*History.*—M. H., a white man, aged 33, admitted to the Willard Parker Hospital, Aug. 25, 1933, had been ill for seven days. On the second day of his illness a nasal voice, nasal regurgitation and difficulty in swallowing developed. Subsequently he noticed a weakness of the left side of the face and on the day of admission was unable to swallow.

At the time of admission he was restless and apprehensive but cooperative. The temperature was 100 F., pulse 120 and respiration rate 30. He had a nasal voice, and saliva continually accumulated in the mouth and pharynx. There was paralysis of the left side of the face and left half of the palate. The tongue deviated to the left when protruded. The chest expansion was poor. There was a generalized muscular weakness and all the deep reflexes were sluggish. The abdominal reflexes were present but the cremasteric reflexes were absent. The patient could not sit up unaided. Lumbar puncture at the time of admission revealed spinal fluid under normal pressure, with 25 mononuclear cells per cubic millimeter, normal content of sugar and slightly increased albumin and globulin.

The foot end of the patient's bed was elevated to permit postural drainage. Secretions that accumulated in the mouth and pharynx were suctioned at frequent intervals. Fluids were given subcutaneously and rectally. August 30 (four days after admission) at 1 a. m., he suddenly became cyanotic and stuporous; breathing was irregular and in gasps. The temperature was 102 F. and the pulse 120. There seemed to be a lag of the chest and diaphragm on the right side. He was placed in a respirator and oxygen was administered with only slight improvement. At 9 o'clock he was removed from the respirator. At this time no paralysis of the intercostal muscles or diaphragm could be made out. He showed no improvement for five days, during which the stupor continued, and at times he was irrational. For prolonged periods his breathing was irregular and cyanosis would persist, even though oxygen was administered.

September 5 he began to improve. The temperature came down to 100 F. and the pulse to 100. A Levin tube was passed and gavages were given. His general condition continued to improve. September 23 (thirty-fifth day of illness) the tongue protruded in the midline. By October 4 he was up in a wheel chair. His palatal and facial paralyses had improved considerably. October 9 (fifty-third day of illness) he swallowed and retained a little soft food for the first time. The following day a fluoroscopic examination was done after the patient attempted to swallow some barium contrast medium. The barium was taken with considerable difficulty and on fluoroscopic examination was seen accumulated in the back of the pharynx, but some of it gradually trickled down the esophagus. A roentgenogram taken five minutes after the barium was administered is reproduced. The report by Dr. Le Wald is as follows: "There is some evidence of paralysis of the muscles of deglutition shown by the inability of the opaque meal to pass beyond the region of the upper end of the esophagus. There are areas of increased density in both lungs, especially on the right side, indicating possible areas of consolidation, which may be due to the fact that the foreign material and mouth secretions have passed into the respiratory tract on account of the paralysis involving the esophagus. October 11 the patient was discharged to his home.

Follow Up.—The patient communicated with us, November 1. His general condition was good. Liquids and semisolid food could be swallowed slowly. Mucus still accumulated in the throat but it was not troublesome. The patient returned to the hospital for a check up, Feb. 5, 1934, four and a half months after discharge. He had a slightly husky nasal voice and a slight cough. He said he swallowed well but at times this had to be done slowly. He had considerable salivation. Examination revealed paresis of the left side of the palate and a little lag in the movements of the facial muscles of the left side. There was diminished expansion of the right side of the

V 19

chest, with dulness and moist râles over the right upper lobe. He was advised to consult his own physician about the lung condition.

The patient was admitted to the Morrisania hospital, April 6, with a history of poor appetite, weakness, cough, night sweats and loss of weight of six weeks' duration. Clinical and roentgenographic examination revealed a tuberculous process in the right upper lobe. Tubercle bacilli were present in the sputum. Hemoptysis occurred, April 15. The temperature rose to 105 F. at times, and he died, April 20. There was no autopsy.

CASE 2.—*History.*—H. W., a white boy, aged 3 years, admitted to the Willard Parker Hospital, Aug. 13, 1933, on the seventh day of his illness, had an eventful past history. At 2 months of age a bilateral otitis media developed and the discharge continued for a considerable time. At 8 months of age he had a bilateral mastoid operation. In November 1932 he had pertussis and in March 1933 measles. In June 1933 a secondary mastoid operation was performed for recurrence of the otitis media. July 19, 1933, the tonsils and adenoids were removed.

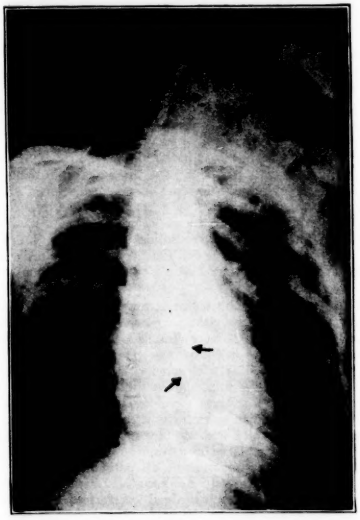
Difficulty in swallowing associated with choking began on the second day of the present illness. On examination at the time of admission the patient was pale, undernourished and acultely ill, with a temperature of 100.8 F., pulse 140 and respiration rate 28. He had difficulty in expectorating mucus and saliva, which accumulated in the throat. He had a nasal voice and his cough was weak. There was an asymmetry of the soft palate. The neck and back muscles were weak. The right patellar reflex was sluggish, and the abdominal reflexes were absent. He was unable to swallow even small amounts of food.

Postural drainage was instituted with suction of the mouth secretions as necessary. Fluids were administered subcutaneously and rectally. Lumbar puncture four days after admission revealed the spinal fluid under normal pressure containing 10 mononuclear cells per cubic millimeter, a normal amount of sugar and slightly increased albumin and globulin. August 17, weakness of the left side of the face and tongue were noticed. During the following week the child's condition remained unchanged. Ten days after admission a gavage was given, but it was immediately vomited. August 29 (the sixteenth day in the hospital) the respirations became rapid and labored, the temperature was 101 F., and there were signs of bronchial pneumonia at both bases. Nineteen days after admission a gavage was retained and they were continued until two days later, when one of the feedings was regurgitated. After the regurgitation the patient choked and became cyanotic. The condition improved gradually during the day. The temperature was 101 F. A blood count at this time showed white blood cells 6,400, polymorphonuclears 49 per cent, red blood cells 3,570,000, and hemoglobin 70 per cent. A roentgenogram revealed slight enlargement of both hilar shadows, slight accentuation of the pulmonary markings and some ill defined hazy mottling scattered around the root structures—maybe bronchial pneumonia. A transfusion of 200 cc. of citrated blood was given. September 12 (one month after admission) a Levin tube was passed, and fluids given through it were retained. Another transfusion of 200 cc. of citrated blood was given. The course was uneventful for a month, except for an occasional attack of choking as a result of accumulated saliva in the throat. October 18 (seventy-third day of illness) the patient swallowed for the first time and retained small amounts of soft food and liquids. October 30 the child was discharged. The palatal and facial paralyses had decreased. He was active and walked well, but his voice was still thick and nasal. He swallowed well.

Follow Up.—The child was brought to the hospital for reexamination three and one-half months after discharge. He had been well since leaving the hospital and swallowed without difficulty. The mother noticed that when the child slept his breathing was noisy. On examination the child was alert and cooperative, without any external evidence of paralysis. Movement of the palate was sluggish. There seemed to be a slight excess of saliva in the mouth. There were rhonchi and a few coarse moist râles on both sides of the chest. His voice was slightly husky and there was a tendency to indistinctness. Swallowing was apparently normal.

CASE 3.—*History.*—D. F., a white youth, aged 19, admitted to the hospital on the third day of his illness, had had difficulty in swallowing of two days' duration. On the day of admission he lost his voice. Examination of the spinal fluid obtained before admission contained 150 mononuclear cells per cubic millimeter, a normal amount of sugar and an increased amount of albumin and globulin. At the time of admission the patient was acutely ill, restless and practically aphonic, with a temperature of 104 F., pulse 120 and respiration rate 32. He was unable to swallow and could not cough. His breathing was shallow and at times irregular, but there was no cyanosis. He could not sit up. The only other positive changes were a stiff neck and back and deviation of the uvula to the right.

His course was marked by frequent elevations of temperature to 105 F. Respirations were at times irregular and shallow, but he was not placed in a respirator. Attempts to swallow food were followed by gagging and regurgitation. There was no evidence of aspiration demonstrable by roentgenography. On the thirty-sixth day of his illness he swallowed for the first time and was discharged two days later.



Location of barium contrast medium in case 1 five minutes after an attempt was made to swallow it. Most of the barium remained in the retropharynx and some is seen in the lower part of the esophagus (indicated by arrows). The patient was unable to swallow for fifty-one days preceding the taking of this picture.

Follow Up.—The patient returned for examination five months after discharge from the hospital. He had gained 20 pounds (9 Kg.), felt well and had continued his studies at college. Occasionally salivation seemed slightly excessive. For a time after he left the hospital food had to be well chewed before it could be swallowed. During the last two months swallowing had been apparently normal. Examination revealed a slight asymmetry of the palate. No other muscle weakness could be made out. His voice was slightly husky at times.

CASE 4.—*History.*—M. B., a white girl, aged 9 years, admitted to the hospital on the fourth day of illness, had had difficulty in swallowing for two days. At the time of admission she had a nasal voice, regurgitated fluids through the nose and was unable to swallow. There was a unilateral weakness of the face, tongue and palate. The patient could not sit up unaided. Respirations were shallow, apparently owing to weakness of the diaphragm.

Her course to a great extent was similar to that described in the three preceding cases. She had a period of respiratory

distress which necessitated treatment in a respirator for two periods of four and five days each. A roentgenogram taken before the second period in the respirator showed "slight enlargement of both hilar shadows and moderate accentuation of the pulmonary markings." On the twenty-seventh day of illness she was able to swallow for the first time. A week later she was discharged. At the time of discharge she was active, had normal reflexes and ate well. She had a residual paresis of the left side of the face and palate.

Follow Up.—The child was examined six months after leaving Willard Parker Hospital. A few days after arriving at home she contracted a cold. There was severe coughing with choking spells, and on the third day of illness she was sent to the Bronx Hospital by her family physician. The diagnosis was bronchitis. She gradually improved and was discharged a month later. The mother stated that the child was more susceptible to colds than she had been before she had poliomyelitis. For a time after discharge from Willard Parker Hospital, food occasionally stuck in the throat. This gradually became less frequent and during the past few months swallowing was apparently normal. The child's voice was husky and had a nasal twang. There was an excessive amount of saliva and mucus in the mouth and throat. The movements of the palate and facial muscles on the left side were sluggish. Contractions of the diaphragm and the intercostal muscles were diminished, more on the right side than on the left.

CASE 5.—*History.*—P. G., a white girl, aged 8 years, admitted to the hospital, Aug. 8, 1933, on the third day of her illness, had a history of irritability, drowsiness, headache, vomiting, nasal voice and nasal regurgitation. At the time of admission the temperature was 103.6 F., pulse 140 and respiration rate 38 per minute. On examination she was well developed and well nourished, with hyperactive deep reflexes and a resistance to anterior flexion of the neck and back. She had a nasal voice. Small amounts of fluids or semisolids, swallowed with difficulty, were soon regurgitated. Spinal fluid contained 270 cells, mostly mononuclears, a slight increase in globulin and a normal amount of sugar.

The following day the temperature was 102 F. There was weakness of the neck and back muscles and the deep reflexes of the lower extremities were diminished. There was difficulty in swallowing saliva, and this was removed by suction. The foot end of the bed was elevated. The patient was fed by nasal gavage. On the third day in the hospital the biceps, triceps and abdominal reflexes were absent. There was marked weakness of the diaphragm, slight respiratory distress and restlessness. Difficulty in breathing increased, and during the night the child was placed in a respirator, where she remained for eighteen hours. Gavage was discontinued and fluids were administered subcutaneously and rectally. After removal from the respirator the patient remained comfortable, even though her breathing was mostly thoracic. She gradually improved and on August 20 (the thirteenth day in the hospital) retained liquids given by gavage. A week later, August 27, she was able to swallow small amounts of fluids. Her ability to swallow increased rapidly. September 1 she was discharged to her home.

Follow Up.—The child was brought to the hospital for reexamination, Feb. 17, 1934, five and one-half months after discharge. She had been well since leaving the hospital and swallowed without difficulty. A slight huskiness of her voice was due apparently to the accumulation of saliva and mucus in the retropharynx. There were no other residual abnormalities due to poliomyelitis.

SUMMARY

Difficulty in swallowing occurs frequently in the bulbar type of poliomyelitis. This is not surprising when one realizes how many muscles and nerves are involved in the complex mechanism of deglutition. Among 123 patients with bulbar poliomyelitis admitted to the Willard Parker Hospital in 1933, 87 had difficulty in swallowing. The condition varied in severity from simple nasal regurgitation of short duration to complete inability to swallow for seventy-one days. The older patients with bulbar lesions showed a greater incidence of impairment of swallowing than the younger ones. The majority of patients were able to swallow normally again in a week. Five patients were unable to swallow for more than three weeks, a condition that has not been reported previously. The treatment consisted of postural drainage, parenteral administration of fluids, gavage and feeding through a Levin tube, which was kept in place several days at a time. Sedatives were given when necessary. The five patients with prolonged inability to swallow had some residual symptoms several months after leaving the hospital. In each one the voice was slightly husky and there was an accumulation of saliva and mucus in the mouth and pharynx. The ultimate prognosis as regards the inability to swallow is good.

531 East Lincoln Avenue—Foot of East Fifteenth Street.

MENSTRUAL EDEMA

PRELIMINARY REPORT

J. SHIRLEY SWEENEY, M.D., Sc.D.
DALLAS, TEXAS

Many changes, physiologic and biochemical, take place during menstruation. Women frequently describe subjective effects, such as general exhaustion, irritability and generalized discomfort. A certain percentage of them, and I believe an increasingly smaller percentage, experience no change in their state of being, physical, mental or emotional. My purpose in this paper is to draw attention to a phenomenon that, up to the present time, has received very little attention, as judged by the literature. I refer to an edema that seems to occur only during the menstrual cycle. William A. Thomas [1] recently reported two cases of extensive, generalized edema that occurred only at the menstrual period. One was admittedly the result of a gross glandular imbalance and responded nicely to glandular therapy. I shall supplement his observations and point out that such a phenomenon is not only limited to women with a clinically recognizable glandular dysfunction but also may be observed, in varying degrees, in presumably normal females.

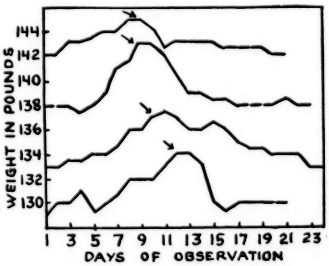


Chart 1.—Variations in weight of a woman who gained as much as 3 pounds during the menstrual period. In the charts the arrows indicate the onset of menstruation.

From the Department of Internal Medicine, Baylor University College of Medicine.

1. Thomas, W. A.: Generalized Edema Occurring Only at the Menstrual Period, J. A. M. A. **101**: 1126 (Oct. 7) 1933.

There is a certain percentage of ostensibly normal women, with perfectly normal menstrual cycles, with normal flow, who will complain of, or describe if questioned, a peculiar tight, stuffy sensation, usually referred to the abdomen, hands or feet, that they experience either preceding or during menstruation, or both. They will often say that their clothes feel unusually tight or that their hands seem slightly stiff, because of a feeling of swelling in them. Shortly after the period is established or has ceased, these sensations

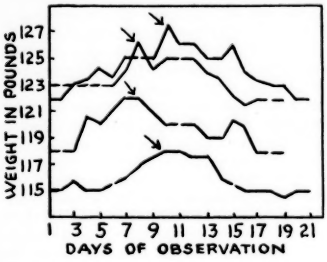


Chart 2.—Variations in weight of a woman who gained as much as 3 pounds during the menstrual period.

disappear. My attention was first attracted to this phenomenon about three years ago when observing a moderately obese Jewish woman, while on a weight reduction program, which consisted only of diet restriction. She was losing steadily, when suddenly, without any apparent cause, she gained 7 pounds (3.2 Kg.) in from thirty-six to forty-eight hours. She spoke of feeling "bloated" and of being tight, and, on examination, it was found that the skin of her hands was unusually taut and there was a definite pitting edema of the shins. In about two more days, menstruation appeared, which was not abnormal, and her weight rapidly returned to the premenstrual level. The same thing recurred with subsequent periods, except that her premenstrual weight gain varied only from 3 to 5 pounds (1.4 to 2.3 Kg.).

This phenomenon was subsequently observed in several other women, one of whom consulted me because of swelling of her feet, legs and hands. This patient was 21 years of age with a perfectly negative family history. She began menstruating at the age of 13, and, after one or two periods, menstruation ceased for about eight months, during which time she gained 20 pounds (9 Kg.). When menstruation reappeared, she lost this excess weight rather rapidly. Her menstrual cycles are now quite regular and normal. She had the usual childhood diseases without complications. Her complaints, as just noted, when she presented herself, were those of swelling of the face, hands and feet, and stiffness of the hands. She stated that she had always been well except for occasional attacks similar to her present complaint. She had never related them to her menstruation. It was found to be associated only with menstruation. The edema still occurs as a premenstrual effect, and pitting is always demonstrable over her shins and feet. Some months it is more marked than others. Her weight gains vary from 3 to 5 pounds.

The next step in this investigation was directed toward a group of presumably normal women who had previously thought nothing of the phenomenon. The group constituted one of the classes of student nurses in Baylor Hospital. No particular effort was made to control many of the variables operating in such an observation, since the uniforms and shoes worn by the students are of the same sort from day to day, and there is practically no shift in daily habits over a short period of time. A total of forty-two of the nurses recorded their weights at the same hour each day and on the same scales. Their observations were started about ten days before their expected menstruation and obtained daily throughout their period, and for approximately ten days following the cessation of menstruation. Out of the forty-two there were approximately 30 per cent of the students who showed a gain of as much as 3 or more pounds during or about their menstruation cycle. Some of the girls showed no change in their weight and a few showed a loss of a pound or two. Several of those who gained a few pounds spoke of a "tight" and "stuffy" feeling, especially referable to their bodies (that is, their clothes felt tighter on them), hands and feet. A few of the girls stated that they had noticed a diminution of urine output at the time, and in some there was an associated slight increase in thirst. The accompanying charts give the curves of those who gained weight.

The explanation of this phenomenon is not clear. Apparently it is to be found only in a certain percentage of women, and there seems to occur a shift in water balance, varying from an unnoticed slight gain in weight, though often a subjective feeling of fulness or tightness, to a retention sufficient to cause a frank pitting edema. Just what the mechanism of the process may be is unknown. There may be some associated disturbance of the sympathetic nervous system. This seems likely in view of the fact that there have been observed other phenomena associated with menstruation, such as a premenstrual elevation of temperature, thought to be a result of some participation of the

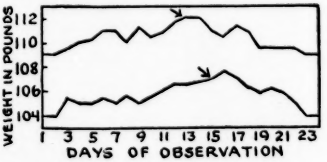


Chart 3.—Variations in weight of a woman who gained as much as 3 pounds during the menstrual period.

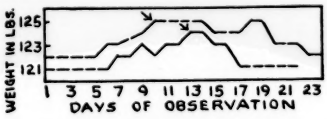


Chart 4.—Variations in weight of a woman who gained as much as 3 pounds during the menstrual period.

sympathetic nervous system. There may be a disturbance in the relation of some of the blood metabolites, such as sodium chloride, or the proteins. Further investigation is in progress in an effort to explain this queer disturbance in water balance, which seems associated with some clinically unrecognizable endocrine imbalance.

SUMMARY

The weight of forty-two normal, healthy young women was recorded before, during and after men-

struation. Approximately 30 per cent of these women showed a gain of 3 or more pounds sometime during the menstrual cycle, usually just before the period was established. Other cases showed a true pitting edema. This phenomenon may be due to some endocrine disorder or disturbance of the sympathetic nervous system rather than to changes in the blood constituents or to renal insufficiency.

Medical Arts Building.

SYMMETRICAL SEROUS SYNOVITIS (CLUTTON'S JOINTS)

CONGENITAL SYPHILIS AND INTERSTITIAL KERATITIS

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AND
HAROLD F. ROBERTSON, M.D.
PHILADELPHIA

Although other writers (Richet,[1] Virchow,[2] Förster[3]) described synovitis of the knees in patients with congenital syphilis, it was not until 1886 that Clutton[4] fully described the condition and associated it with congenital syphilis. Clutton wrote: "I have never seen both knee joints filled with fluid causing scarcely any pain or discomfort, whilst other joints remain quite free from any signs of inflammation except in cases where there were complete evidences either past or present of hereditary syphilis."

Since the publication of Clutton's paper the condition has been known as Clutton's joints.

Although this type of synovitis is a valuable and frequent symptom of congenital syphilis, it has not received the attention it deserves. Many textbooks on surgery and on disease of children by American authors make no mention of it or discuss it briefly. It is briefly described in most textbooks on orthopedic surgery, usually as a variety of syphilitic arthritis. Reference to the condition is more frequent in the foreign literature, and it is described more fully in textbooks by foreign writers. It is variously termed symmetrical synovitis, symmetrical serous synovitis, hydrarthrosis, hydrops, painless effusion of the knee joints and Clutton's joints. The eponym is rarely used by American writers.

"Clutton's joints" refers to a painless hydrarthrosis, which is not tender and is unassociated with bone changes. It usually involves the knee and may be unilateral but is more frequently bilateral. A synovitis is the primary and most important pathologic process. The condition is seen for the most part in syphilitic children and is the most common form of syphilitic change in the joints in the congenital variety of the disease. Syphilis of the joints occurring in infants is represented by inflammation secondary to involvement of the neighboring epiphysis. Serous synovitis (Clutton's joints) in adults the subjects of acquired syphilis is uncommon and usually precedes or accompanies the secondary eruption. Such cases have been reported by Gaté and Charpy,[5] Montpellier and Lacroix,[6] Wile and Senear[7] and others. In the series of 165 cases of primary or secondary syphilis reported by Wile and Senear, hydrarthrosis was present in two, both knees were affected in one, and both ankles were affected in the other.

Symmetrical synovitis of children is characterized by its insidious onset. First one joint is affected, and after an interval of months, or rarely of years, the corresponding joint on the opposite side of the body becomes involved. The knee is the site of predilection. In our series of 363 patients with congenital syphilis, sixty-three had Clutton's joints, and the knee was involved in all. Two patients had a concomitant involvement of the elbow. In the forty-three cases reported by von Hippel,[8] the knee joint was involved forty-one times, and in thirty-five cases it was the only joint attacked. The elbows, wrists and fingers were the other joints involved. The knee was affected in all but three of the fifty-four cases recorded by Jeans and Cooke.[9] The elbow was involved four times, the wrist three, the fingers two, and the ankle once. In a case described by Maynard,[10] the knees, ankles, elbows and wrists were involved consecutively. Although some writers state that the hip or shoulder may be involved, we know of no recorded instance of such involvement.

The process is almost invariably painless and apart from the swelling usually gives no indication of its presence. At times there is slight or moderate pain, and the patient may limp. In one of our patients the pain disturbed sleep, and a few complained of some stiffness of the affected joint. A small number of our older patients, the mothers of the younger patients, were aware of a swollen joint. In view of the insidious onset and the lack of subjective symptoms, it was not possible, in our series, to determine the duration of the condition.

At the time of examination, the majority of patients with Clutton's joints present a bilateral involvement. In our series of sixty-three cases, both knees were involved in thirty-one, only the right knee in eight, and only the left knee in five. In patients with bilateral involvement, one knee is more swollen than the other. The swollen joint is distended with fluid but is not tense, and on palpation it gives a sensation of flaccid fluctuation. The swelling frequently extends above the patella, and patellar ballottement is obtainable. There is no enlargement of the ends of the bones. There is no tenderness or heat in the joint, and the overlying skin is not red. At times the synovial membrane feels thickened. The joint movement is free except for a slight limitation when there is an excess of fluid. There is no disturbance of function and there is no muscular atrophy. Creaking is not elicited by manipulation. In our two patients with involvement of the elbow, movement was impaired. One of our patients, with swelling of both knees, did esthetic dancing. The illustrations are reproductions of photographs of Clutton's joints taken at different angles.

From the Wills Hospital Clinic. No. 6 of a series of publications on studies of ocular syphilis.

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2. Virchow, Rudolf: Ueber syphilitische Gelenkaffectionem, Berl. klin. Wchnschr. **21**: 534, 1884.
3. Förster: Handb. d. ges. Augenh., Leipzig, Graefe & Saemisch **7**: 59-234, 1877, chapter 13.
4. Clutton, H. H.: Symmetrical Synovitis of the Knee in Hereditary Syphilis, Lancet **1**: 391, 1886.
5. Gaté, J., and Charpy, J.: Hydarthrose du genou droit sans lésions osseuses a la radiographie chez une femme presentant des syphilides élégantes du visage avec sérologie positive; Guérison rapide par le traitement, Bull. Soc. franç. de dermat. et syph. **40**: 38 (Feb.) 1933.
6. Montpellier, J., and Lacroix, A.: Syphilitic Hydrarthrosis, Ann. d. mal. vén. **17**: 294 (April) 1922.
7. Wile, U. J., and Senear, F. E.: Study of the Involvement of the Bones and Joints in Early Syphilis, Am. J. M. Sc. **152**: 689, 1916.
8. von Hippel, E.: Ueber die Häufigkeit von Gelenkerkrankungen bei hereditär Syphilitischen, München. med. Wchnschr. **58**: 1321, 1903.
9. Jeans, P. C., and Cooke, J. V.: Prepubescent Syphilis vol. 17 of Clinical Pediatrics, New York, D. Appleton & Co., 1930.
10. Maynard, quoted in Dunlop.[11]

In rare instances the effusion develops suddenly. Dunlop [11] reported the sudden appearance of Clutton's joints in a patient who was receiving treatment for interstitial keratitis. In two patients of our series, the symmetrical synovitis appeared, following injury to the knee. Other writers have observed a similar occurrence.

AGE INCIDENCE

The majority of patients with Clutton's joints are between the ages of 8 and 15 years. In von Hippel's series of forty-three cases, eight patients were below the age of 5 years, and one was in the age range of 21 to 25 years. The oldest patient in Clutton's series was 20 years of age. In our series the majority were from 8 to 15 years. This fact will be more fully discussed later.

ROENTGENOGRAPHIC EXAMINATION

No changes in the bone are seen. The picture merely shows a distention of the joint.

PATHOLOGY

The reported instances of pathologic examination of tissue removed from an involved joint are few. D'Arcy Power,[12] who has performed arthrectomies on patients with Clutton's joints, states that a considerable proportion of the cases show definite pathologic changes, which he describes as follows: The synovial membrane is infiltrated and studded with gummas and is everywhere thickened and much more vascular than normal. Villous processes grow from the endothelial aspect of the synovial membrane. The synovial fringes are especially infiltrated, hanging down into the joint and filling its cavity with a soft, gelatinous material, presenting a soft, reddish, elastic appearance. In the center it is grayish white and caseated, resembling the granulation tissue of tuberculous disease. In some cases, nodes are felt in the capsule of the joint, which give it a firm and almost cartilaginous feeling, while in others the synovial membrane is only a little thickened and hyperemic. In cases of the latter type the condition is true hydrops articuli, or synovial dropsy.

Borchard [13] examined microscopically the synovial membrane removed from the knee of a woman, aged 29. Clinically, both knees were swollen, the synovial membrane was palpably thickened and movement was impaired and painful. A polypous gumma was found which involved the capsular ligament. The fringes of the synovial membrane were swollen and contained small gummas. Microscopic examination showed gummatous formations. Borchard believes that acute synovitis causing an acute hydrarthrosis is seen only in the secondary stage of syphilis. He contends that other forms of hydrarthrosis of syphilitic origin are expressions of gummatous synovitis and are seen in patients with congenital syphilis and in the tertiary stage of acquired syphilis.

DIFFERENTIAL DIAGNOSIS

It becomes apparent that what is clinically Clutton's joint may represent pathologically a mild inflammation of the synovial membrane or more pronounced changes with gummatous formation, and clinically it may be difficult to determine when a simple synovitis ends and a gummatous synovitis begins. It is probable that the difference in the degree of pathologic involvement accounts for the variable course of the disease, the uncertain response to treatment and for the fact that the symptoms described by different writers are somewhat varied. Gummatous synovitis is less common than symmetrical serous synovitis. The clinical picture of gummatous synovitis resembles that of tuberculous synovitis, from which it is differentiated by the following features: It is more likely to be symmetrical and less likely to involve a single joint. Pain, impairment of movement and muscular atrophy of the limb are less pronounced than in tuberculous synovitis. In addition, patients with tuberculous synovitis have sudden pains at night, so-called night screaming, and in the later stages of the disease in cases in which the knee is involved there occur triple displacement, flexion, displacement backward, and rotation outward. These features are absent in cases of gummatous synovitis.

Fig. 1.—Clutton's joints in a boy with interstitial keratitis. Both knee joints were distended with fluid, the right more than the left. Patellar ballottement was elicited on both sides. Thickening was palpable beneath the patella. Motion was not impaired. The patient complained of aching of the knees after skating or walking a considerable distance.

COURSE IN UNTREATED AND TREATED PATIENTS

The course of the disease in untreated patients is chronic, remaining unchanged for months and at times for years. Relatively few patients with Clutton's joints are seen after the age of 20. The process tends to terminate in a spontaneous recovery; the involved joint becomes normal. In the case reported by Soupault and Marceron [14] the bilateral effusion in the knee joints appeared at the age of 10 years and persisted for three years.

The response of symmetrical synovitis to antisyphilitic treatment is variously described by the different writers. The majority state that the response is gradual. The fact that mercury and iodides do not have

11. Dunlop, G. H.: Syphilitic Synovitis in Children, Edinburgh M. J. **58**: 516, 1904.
12. Power, D'Arcy: A System of Syphilis, ed. 2, London, Hodder & Stoughton **2**: 60, 1914.
13. Borchard: Ueber luetische Gelenkentzündungen, Deutsche. Ztschr. f. Chir. **61**: 110, 1901.
14. Soupault and Marceron: Hydarthrose syphilitique, Bull. Soc. franç. de dermat et syph. **29**: 380, 1922.

the same effect in this condition as they do in acquired syphilis is stressed in Clutton's original report. Other writers give the impression that antisyphilitic treatment produces a striking improvement. Dunlop speaks of almost miraculous improvement after mercury and iodide therapy. On the other hand, Sutherland [15] writes that "the affection, like interstitial keratitis, tends to run a prolonged course over several years it may be,

Fig. 2.—Clutton's joints in a boy with interstitial keratitis. This was the most pronounced case in our series. There was considerable swelling of both joints, thickening of the synovial membrane and slight impairment of motion. The patient complained of slight pain in both knees. After antisyphilitic treatment the swelling gradually disappeared in the course of about one year.

with temporary improvement, with possibly a period of cessation, and then a relapse, and that no treatment, mercurial or otherwise, will have any direct effect." Barrett [16] reports the case of a girl, aged 5 years, with symmetrical synovitis involving both knees, ankles, wrists and elbows. The course was chronic, the disease persisting despite antisyphilitic treatment.

An immediate effect of antisyphilitic treatment was observed in only a few of our patients. Generally, the swelling of the joint gradually disappeared during a period of months or in some cases a year or longer after treatment was started. The prompt improvement and the disappearance of lesions, which invariably result from antisyphilitic therapy in the other forms of syphilis, with the exception of interstitial keratitis, do not occur in cases of Clutton's joints. Because symmetrical synovitis tends to disappear spontaneously, it is difficult in some cases to ascribe a curative effect to treatment. We believe, however, that treatment shortens the course of the process. In only a limited way are we inclined to share the opinion of Sutherland.

In all our cases the effusion eventually disappeared and the involved joints became normal. We have never observed relapse or ankylosis of the joint, which have been noted by some writers. Ankylosis is probably the result of syphilitic arthritis associated with involvement of the neighboring bones. This type of syphilitic arthritis should not be confused with symmetrical synovitis or Clutton's joints.

In some of our cases we employed rest of the joint, and the application of splints or casts in addition to antisyphilitic therapy. These measures were ineffective. This conclusion agrees with the experiences of others. Surgical intervention was unnecessary in our cases.

15. Sutherland, G. A.: The Treatment of Diseases in Children, London, Oxford Medical Publications, 1913, p. 65.

16. Barrett, J. B.: Case of Syphilitic Synovitis, Brit. J. Child. Dis. **6**: 102, 1909.

INCIDENCE OF CLUTTON'S JOINTS IN CONGENITAL SYPHILIS; ITS ASSOCIATION WITH INTERSTITIAL KERATITIS

Most authors stress the association of Clutton's joints with interstitial keratitis and state that the joint condition usually precedes the keratitis. In Clutton's series of thirteen patients with symmetrical synovitis, nine had interstitial keratitis. Thirty-five of the forty-three patients with symmetrical synovitis studied by von Hippel showed interstitial keratitis. Almost all other reports concerning Clutton's joints embrace a small number of patients, the majority of whom had an associated interstitial keratitis. It would appear that Clutton's joints are seldom unassociated with interstitial keratitis.

Jeans and Cooke [9] studied the association of syphilitic arthritis with syphilitic keratitis in a large series of cases. In fifty-four cases of arthritis, keratitis was present in 42 per cent. They state that this incidence is relatively high. The incidence of keratitis in 329 active cases of syphilis was nearly 60 per cent. In ninety-three cases of keratitis, arthritis was present in 12 per cent. Since arthritis was present in 16 per cent of all children over 2 years of age with clinically active syphilis, they state that arthritis is certainly no more common in patients with keratitis than in others. The figures of Jean and Cooke relative to the incidence of arthritis included all types of joint cases. The most common variety, however, was symmetrical synovitis of the knee.

In our study we determined the incidence of Clutton's joints among patients with congenital syphilis,

Fig. 3.—Clutton's joints in a boy with interstitial keratitis. Both joints were moderately distended with fluid, the left more than the right. Motion was not limited and there were no subjective symptoms.

divided into three groups. The first group included 250 patients with interstitial keratitis. Clutton's joints were present in forty-five patients, or 18 per cent. The second group included patients with ocular lesions of syphilis other than interstitial keratitis. Among fifty-three patients, nine (17 per cent) had Clutton's joints.

The third group included patients with inactive congenital syphilis without ocular manifestations. Nine (15 per cent) of the sixty patients included in this group had Clutton's joints. Most of the patients in this group were the brothers and sisters of patients with interstitial keratitis. All had positive Wassermann reactions, excepting two, both of whom had Clutton's joints. One of these patients showed other stigmas of congenital syphilis. These two were the only instances of negative Wassermann reactions encountered in the entire series of patients with Clutton's joints.

In our total number of 363 patients with congenital syphilis the incidence of Clutton's joints was 17.3 per cent. We demonstrated a slightly greater incidence of the condition in patients with interstitial keratitis than in other patients with congenital syphilis.

The various authors differ in their statements regarding the frequency of Clutton's joints in patients with congenital syphilis. For example, it was 7 per cent in 292 cases reported by Leo;[17] in von Hippel's study it was 56 per cent, and in Fournier's series of 212 cases it was 39 per cent. The statistics of Jeans and Cooke have been quoted.

In a discussion of the association of Clutton's joints with interstitial keratitis it is pertinent to compare the sex and age incidence of the two conditions. It is well known that interstitial keratitis is more common in females and it is most frequent between the ages of 8 and 15 years. In our series of 250 patients with interstitial keratitis, the youngest was 3½ years and the oldest was 44; 50 per cent were between the ages of 8 and 17 years and 70 per cent were between the ages of 8 and 22 years. Sixty-three per cent of the patients were females and 37 per cent were males, a sex distribution almost identical with that of the original 100 cases reported by Hutchinson. In our series of sixty-three cases of Clutton's joints, the youngest patient was 5 years and the oldest was 35 years; 57 per cent were between the ages of 8 and 15 years; 77 per cent were between 8 and 20 years. The ratio of females to males was exactly the same as that of interstitial keratitis. The age and sex distribution of the group of patients with interstitial keratitis and without Clutton's joints showed little variation from that of the group with Clutton's joints.

There is a peculiar susceptibility of the osseous system and of the cornea in congenital syphilis. Interstitial keratitis and involvement of the bones and the joints are the most outstanding manifestations of active syphilis in infants and children. There is a striking similarity between symmetrical synovitis and interstitial keratitis. Both conditions are characteristic of congenital syphilis, occur most frequently in the same age range and affect females more frequently than males.[18] The involvement is unilateral at first in each condition and an interval of time elapses before the commencement of symptoms on the second side. One eye or one joint is involved to a greater extent than its mate. Both processes pursue a chronic course and produce little or no destructive changes in the tissues. Both conditions respond very slowly to antisyphilitic therapy. Symmetrical synovitis may appear in the second joint after the administration of antisyphilitic treatment in a manner comparable to that in which interstitial keratitis not infrequently appears in the second eye after the commencement of treatment. This phenomenon is unique in the domain of syphilology. Finally, both conditions may appear after trauma.[19] In our two patients in whom symmetrical synovitis appeared after injury to the knees, interstitial keratitis developed after a brief interval. This sequence is in line with the statement of most observers that the development of symmetrical synovitis usually precedes that of interstitial keratitis.

INCIDENCE OF CLUTTON'S JOINTS COMPARED WITH THAT OF OTHER STIGMAS OF CONGENITAL SYPHILIS

The incidence of Clutton's joints (18 per cent) was compared with the incidence of other stigmas of congenital syphilis in the group of 250 patients with interstitial keratitis. The incidence of other stigmas was as follows: Hutchinson's teeth, 17.5 per cent; other abnormalities of the teeth, 27.5 per cent; chronic periostitis of the tibia (the saber-shaped or Fournier's tibia), 29 per cent; facies of congenital syphilis, 45.5 per cent. The facies was described as suggestive in 8 per cent.

Fig. 4.—Clutton's joints much less pronounced than in the preceding illustrations.

It is interesting to note that the incidence of Clutton's joints in our study was the same as that of Hutchinson's teeth. Other writers, notably von Hippel, have emphasized this fact and suggested that symmetrical synovitis could approporiately displace deafness in Hutchinson's relatively uncommon triad of interstitial keratitis, deafness and notched teeth. Interstitial keratitis, notched teeth and symmetrical synovitis are much more frequently associated.

17. Leo, F.: Ueber die Entwicklung kongenital-luischer Kinder und gesunder Kinder luischer Mutter, Dermat. Wchnschr. **94:** 787 (June 4) 1932.

18. The many curious features of interstitial keratitis constitute the most remarkable phenomena in syphilology. The most noteworthy feature is the invariable involvement of the second eye, even after antisyphilitic treatment has been instituted. It is not pertinent to discuss here the explanations that have been offered; it is interesting to note, however, that Hutchinson apparently considered that the two eyes act as one organ, as he stated, in explanation, that symmetrical diseases are always manifested first on one side and simultaneous bilateral involvement is rare. Further discussion of Hutchinson's opinions and teachings is furnished by Klauder, J. V.: Jonathan Hutchinson, Medical Life **41:** 313-326 (June) 1934.

19. A detailed discussion of the relation between interstitial keratitis and trauma is furnished by Klauder, J. V.: Ocular Syphilis; Interstitial Keratitis and Trauma; Clinical, Experimental and Medicolegal Aspects, Arch. Opth. **10:** 302-328 (Sept.) 1933.

In a comparison of the incidence of symmetrical synovitis to other stigmas of congenital syphilis it should be observed that, unlike other stigmas, synovitis is not permanent; its incidence is in relation to the age of the patient. Symmetrical synovitis is a valuable sign of congenital syphilis. Examination of the joints, especially the knees, should not be neglected in the search for evidence of congenital syphilis. Clutton's joints are of prognostic significance. Every child with congenital syphilis is a potential candidate for interstitial keratitis,[20] especially in the age range already discussed. It appears that the presence of Clutton's joints increases the likelihood of the development of interstitial keratitis.[21]

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THE SUGAR TOLERANCE IN SIBLINGS OF JUVENILE DIABETIC PATIENTS

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It is generally accepted that diabetes mellitus is a familial or hereditary disorder of metabolism. In fact, Pincus and White [1] have been able statistically to show that diabetes is inherited as a mendelian recessive characteristic. Experimental proof of this fact has been brought forward by Cammidge.[2] He was able, by mating strains of mice having a high fasting blood sugar with those having normal blood sugars, to transmit the hyperglycemia to succeeding generations as a recessive quality. Cammidge suggested that in human beings the same blood sugar conditions might occur. Joslin and his co-workers [3] have shown that new cases of diabetes mellitus are continually being encountered in the families of diabetic children. They have shown a progressive incidence in new cases in those families from year to year.

Because of the familial tendency of diabetes, a study was started in 1928 with the purpose of detecting early impairment of sugar tolerance in siblings of diabetic children by means of the dextrose tolerance test. A somewhat similar study had been undertaken by Sherrill,[4] who was probably the first investigator to study the carbohydrate tolerance of relatives of diabetic patients. He studied forty relatives of twenty-three diabetic patients. Twenty-two of these were 20 years of age or older while eight were from 3 to 20 years of age. Twenty-one of the forty cases showed what the author considered to be an impairment of sugar tolerance. Of the eight patients under 20 years of age, three had a high blood sugar which persisted for two hours following the dextrose meal. The other five showed normal curves. Twin girls, aged 6 years, showed diabetic types of curves. Further reports on these cases are not available.

In 1931 Sehestedt [5] reported on the sugar tolerance of six siblings of three juvenile diabetic patients. He employed three types of sugar tolerance tests, the one comparable to our own in which one dose of dextrose was given, the second consisting of three doses of 20 Gm. each of sugar at intervals of one hour, and the third, 25, 50 and 75 Gm. of bread given one hour apart. The results of the first test, which is comparable to that which most workers employ, showed that four of the six children had fairly normal curves. Two gave an irregular response. One of these a year later again showed a slightly elevated type of curve but the patient in the meantime had not developed diabetes. Sehestedt's single case is the only report we could find in the literature of reexamination of siblings of diabetic children who had been previously tested for their dextrose tolerance.

John [6] reported on 1,100 routine dextrose tolerance estimations on adult patients admitted for various complaints to the Cleveland Clinic. Of 104 cases with a diabetic family history, 44.2 per cent gave a non-diabetic type of curve while 55.7 per cent gave a diabetic type of curve. The high percentage of diabetic curves cited by Sherrill and John made us wonder in how many patients who had the so-called diabetic type of blood sugar curve diabetes subsequently developed.

John classified sugar tolerance curves in four ways:

1. Very little or no rise, interpreted as increased tolerance.
2. A rapid rise and equally rapid fall (one to one and one-half hours), interpreted as normal tolerance.
3. A slower and higher rise and a slower fall (two and one-half to three and one-half hours), interpreted as decreased tolerance, a prediabetic type of curve.
4. A slow, high rise and equally slow descent (three and one-half hours or more), interpreted as a diabetic type of curve.

This classification brings up the question as to whether one is justified in considering as prediabetic those individuals who may show a delayed return to normal following a dextrose meal. John [7] stated that he intended to restudy the curves of nondiabetic subjects in order to determine whether it is only the person with a reduced tolerance to carbohydrate, as shown by the test meal, who eventually becomes diabetic.

Our study was likewise undertaken with the idea of following the siblings of the diabetic children under our care for some time after their dextrose tolerance had been studied. Originally, thirty siblings of twenty diabetic children were studied. Twenty of these were Jewish and ten non-Jewish. Twenty-one of the thirty children were reexamined in 1934.

TECHNIC

The Kuttner modification of the micro-Folin-Wu test for blood sugar was used. All estimations were made on capillary blood soon after its withdrawal. Studies were begun after a fourteen hour overnight fast. Determinations for dextrose were done on the samples withdrawn in the fasting state and at intervals of one-half, one, one and one-half, two and two and one-half hours after the ingestion of the dextrose solution. We estimated the amount of dextrose to be

20. The incidence of congenital syphilis in the general population, as given by different writers, ranges from 0.5 to 3 per cent, and the incidence of interstitial keratitis among patients with congenital syphilis ranges from 25 to 50 per cent.

21. Since this paper was written, we have observed a girl, aged 20, with interstitial keratitis. The diagnosis of interstitial keratitis of congenital syphilis was not made until about one month after its onset. One month antedating the appearance of the keratitis, one elbow became the site of a Clutton's joint. There were no other stigmas of congenital syphilis. Correlation of the joint condition with the keratitis would have promoted early diagnosis of interstitial keratitis of syphilitic origin.

From the Children's Diabetic Clinic, service of Dr. Bela Schick, Mount Sinai Hospital.

1. Pincus, G., and White, Priscilla: On the Inheritance of Diabetes Mellitus, Am. J. M. Sc. **186:** 1 (July) 1933.

2. Cammidge, C. J.: Diabetes Mellitus and Heredity, Brit. M. J. **2:** 738 (Oct. 27) 1928.

3. White, Priscilla: Diabetes in Childhood and Adolescence, Philadelphia, Lea & Febiger, 1932, p. 29.

4. Sherrill, J. W.: The Diagnosis of Latent and Incipient Diabetes, J. A. M. A. **77:** 1779 (Dec. 3) 1921.

5. Sehestedt, H.: Blutzuckerkurven bei geschwistern zuckerkranker Kinder, Deutsches Arch. f. klin. Med. **172:** 228, 1931.

6. John, H. J.: A Summary of Findings in 1,100 Glucose Tolerance Estimations, Endocrinology **13:** 388 (Aug.) 1929.

7. John H. J.: Personal communication to the authors.

used by means of the formula devised by Pirquet. This utilizes the sitting height squared as the index of the nutritional surface area. Fries and Kohn [8] found this method to be satisfactory for estimating the dextrose to be administered when determining the sugar tolerance curve in children. In terms of grams of dextrose per kilogram of body weight, this amounted to from 0.96 to 1.85 Gm. per kilogram of body weight (column 11 in accompanying table). Gilchrist [9] found that the blood sugar curves in children, when given 1 Gm. or more of dextrose per kilogram of body weight, were similar to those found in adults.

RESULTS

The siblings of our diabetic children were on the whole slightly overheight and overweight when compared to average normal standards.[10] In only a few instances, however, was overgrowth striking.

Of thirty sugar tolerance tests, twenty-five were normal, three gave a relatively high figure at the one hour reading, and two of these were still high after one and one-half hours. All five, however, were normal after the two and one-half hour period. It is interesting to call attention to the fact that in sixteen instances the two and one-half hour reading was below the fasting blood sugar. This phenomenon has been observed by others in normal individuals. No indication of decreased tolerance was noted in subject 29, a girl whose two brothers and one sister have diabetes. Subject 9, who was recuperating from an acute mastoiditis at the time of the test, had a curve within normal limits. One of heterozygous twins, L. T., subject 25, showed a rather high curve, her blood sugar at the end of one and one-half hours being 140 mg. This child as well as M. T., her twin sister, subject 24, was retested early in 1934. Their curves at this time were both normal. L. T.'s fasting blood sugar was 65 mg., which rose to 120 mg. at the end of one and one-half hours and fell to 75 mg. at the end of two hours. M. T. had an even lower curve.

It was with particular interest that the urine of the siblings was reexamined in 1934, six years after the dextrose tolerance tests. Urine was obtained from twenty-one of the thirty children whose curves are tabulated, including the five who had slightly elevated sugar tolerance curves. No glycosuria was found in any specimen. All three children who were more than 5 per cent overheight for their age had normal blood sugar tolerance curves when they were reexamined. In addition to being siblings of a diabetic child they were markedly overgrown but as yet have shown no indication of diabetes. We intend to repeat the dextrose tolerance tests of all these siblings after a few more years.

In our series of fifty-seven juvenile diabetic patients, some of whom have been observed for as long as nine years, no brother, sister or parent developed diabetes during that time. In some instances, to be detailed in a subsequent paper, a close relative became diabetic. Since nine years is only a fraction of the average life expectancy, these observations are of limited significance, for siblings and parents of juvenile diabetic patients can develop diabetes at any time over a period of years. It was hoped, however, as indicated by other workers in this field, that it might be possible to detect a predisposition to diabetes by means of the sugar tolerance test. This has not been the case thus far in thirty siblings of juvenile diabetic patients, as indicated by the curves as well as the subsequent histories of these patients. Since the onset of diabetes in children and in adolescents is, as a rule, rather sudden, we feel that the sugar tolerance method does not hold much promise as a means for detecting early cases of diabetes in childhood. This method might be

Sugar Tolerance and Growth Studies of Siblings of Juvenile Diabetic Patients of the Children's Diabetic Clinic of the Mount Sinai Hospital *

Subject	Sex	Race	Age	Sitting Height, Cm.	Standing Height, Cm.	Average Normal Standing Height, Cm.	Weight, Kg.	Average Normal Weight, Kg.	Pelidisi Pirquet Index†	Grams Dextrose	Gm. per Kg.	Fasting Blood Sugar, Mg. per 100 Cc.	Blood Sugar ½ Hr. P.C.	Blood Sugar 1 Hr. P.C.	Blood Sugar 1½ Hrs. P.C.	Blood Sugar 2½ Hrs. P.C.
1. H. G.	M	Jewish	2½	53	96	89	14.5	12.3	99	24	1.65	60	73	88	66	52
2. V. I.	F	Jewish	2¾	56	102	91	15.4	15.9	96	25	1.62	78	125	83	105	79
3. D. J.	F	Czech	3½	56	101	97	13.8	15.9	93	25	1.81	70	132	120	88	59
4. M. M.	F	Irish	4	58	97	99	15.6	15.4	93	28	1.79	81	132	92	69	56
5. J. R.	M	Jewish	4	58	104	104	17.9	17.7	98	28	1.56	62	116	112	95	64
6. R. I.	F	Jewish	4½	58	106	107	17.7	17.7	98	30	1.69	75	160	75	95	59
7. M. S.	F	Irish	5	60	106	112	16.1	17.7	91	30	1.86	99	192	140	72	92
8. G. M.	M	Irish	5	59	100	112	15.6	16.3	91	29	1.85	56	85	91	56	81
9. L. L.‡	M	Jewish	5	61	112	112	17.2	20.9	91	31	1.80	80	150	160	110	90
10. A. I.	M	Jewish	7	68	126	122	23.4	26.4	94	43	1.69	92	100	80	74	57
11. B. G.	M	Jewish	8	72	134	127	26.0	31.8	89	43	1.65	70	188	80	80	70
12. P. S.	M	Jewish	9	67	128	132	30.5	27.7	101	37	1.21	67	93	75	90	60
13. M. L.	F	Jewish	10	74	138	137	38.2	33.6	98	42	1.09	68	116	113	70	60
14. P. R.	F	Jewish	10	71	134	137	34.7	31.8	99	42	1.21	52	130	112	94	68
15. I. G.	M	Jewish	10	77	144	137	41.0	38.2	97	50	1.21	83	67	80	64	54
16. S. S.	M	Jewish	10	72	134	137	31.1	31.8	95	43	1.38	68	85	96	68	58
17. E. H.	F	Jewish	10	69	126	137	27.1	24.0	96	39	1.43	60	120	82	112	68
18. R. S.	F	Irish	11	78	148	142	33.4	40.9	90	51	1.52	115	186	144	108	94
19. E. G.	M	Czech	11	75	142	142	33.1	35.0	92	47	1.42	62	196	82	112	85
20. V. S.	F	Irish	12	75	144	147	35.4	39.1	95	45	1.27	80	104	56	87	63
21. W. S.	M	Italian	12	74	141	147	33.0	35.0	95	47	1.34	55	120	80	68	60
22. M. S.	F	Jewish	13	76	148	152	36.8	41.8	94	48	1.30	70	102	58	58	50
23. M. H.	M	Jewish	13	76	144	146	38.1	35.0	95	48	1.26	50	100	82	96	76
24. M. T.)§	F	Jewish	13	85	165	152	42.9	56.4	101	61	0.96	83	156	65	85	60
25. L. T.)	F	Jewish	13	83	157	152	39.1	49.5	101	58	0.98	105	196	160	140	78
26. S. S.	M	Italian	14	82	158	160	46.8	49.1	95	56	1.19	70	102	165	95	85
27. P. S.	M	Jewish	15	79	158	165	54.8	50.1	104	52	0.94	64	87	87	66	58
28. J. H.	M	Jewish	15	87	164	165	43.5	56.8	87	55	1.26	70	180	150	68	78
29. D. S.	F	Jewish	19	87	164	163	49.0	59.1	91	63	1.28	96	113	68	66	55
30. F. S.	F	Italian	19	83	153	163	51.8	52.7	97	57	1.10	101	180	196	160	85

* Figures for average normal height and weight were taken from the Baldwin-Wood, Woodbury and Kornfeld height-weight tables.
† Pelidisi is a numerical index of nutrition according to the Pirquet system.
‡ Test done following acute mastoiditis.
§ Twins.

8. Fries, M. E., and Kohn, J. L.: Glucose Tolerance Tests in Children, Am. J. M. Sc. **170**: 547 (Oct.) 1925.
9. Gilchrist, M. L.: Glucose Tolerance and Blood Sugar Curve in Childhood, Arch. Dis. Childhood **4**: 129 (June) 1929.
10. Baldwin-Wood, Woodbury and Kornfeld tables.

of value in older patients in whom the onset of diabetes is frequently insidious.

CONCLUSIONS

1. Thirty siblings of juvenile diabetic patients were examined. Their sugar tolerance curves were within normal limits.

2. Of these, twenty-one were reexamined six years later. In none of them had diabetes developed. We were able to ascertain that the other nine, although they were not examined, had no symptoms of diabetes.

3. Five siblings whose curves suggested a decreased tolerance for carbohydrate in 1928 were retested in 1934. The curves gave normal values and showed no prediabetic tendency.

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INTRASPINAL (SUBARACHNOID) INJECTION OF ABSOLUTE ALCOHOL

FOR THE CONTROL OF PAIN IN FAR ADVANCED MALIGNANT GROWTHS

HARRY C. SALTZSTEIN, M.D.
DETROIT

"To the lay mind, carcinoma denotes pain." [1] Other diseases have just as long a period of disability with no hope in many cases of averting a fatal outcome; e. g., heart disease, chronic arthritis, tuberculosis; but they are not the scourge that cancer is because friends and relatives do not see the months of severe uncontrollable pain and distress that are so common in terminal cancer cases.

In 1931 Dogliotti [2] reported that he had relieved forty cases of pain in the lower part of the back, the pelvis and the legs due to various conditions (chronic arthritis, sciatica, abdominal tabetic crises and the like) by intraspinal injections of absolute alcohol.

Yeomans [1] reported its use in seven cases of malignancy presenting lower abdominal and rectal pain.

I have used the method in eleven cases. My purpose in presenting the results in this small series is that the field for usefulness of this procedure must be very large, and I hope that others will try it.

I have very little to add to Yeomans' description of the technic:

For visceral and abdominal pain, injection may be made between the first and second lumbar vertebrae. With the patient resting on the side opposite to that affected, the alcohol in a tuberculin syringe is injected very slowly, drop by drop, a total of from 0.2 to 1 cc., varying with the nature of the case. The patient remains in this position for twenty minutes and then is rolled on his back, where he rests for two hours. Following the injection, zones of anesthesia or hyperesthesia may appear, and cutaneous tendon reflexes may be diminished or lost. The motor effects are mild, but temporarily the knees may bend under the patient when he stands or tries to walk. These phenomena disappear in a few hours or, at most, days. Usually there is no disturbance of bowel or bladder function, although in one of our cases there was retention of urine.

If the pain is not relieved in a fortnight, the injection is repeated at the same level of the spinal cord, but with the patient resting on the opposite side. The rationale of the treatment is that absolute alcohol, being lighter than the spinal fluid, rises and follows the line of exit of the spinal nerves; hence the necessity of keeping the patient immobilized for some time after the injection. The spinal fluid is at first under increased pressure and the cell count is increased, but it returns to normal in ten days. The relief of pain on the average lasts for six months.

The procedure is especially useful in far advanced cervical cases. Frequently radium and x-rays stop the vaginal bleeding, and, though the local lesion remains cured, the disease continues to progress in the retroperitoneal glands. In some of these cases within two to four months low lumbar distress and pain on exertion begin, gradually becoming more severe. Soon there is a continuous viselike backache, sometimes with pain down one buttock or leg almost as severe as the root pains of tabetic crises.

This is likewise true with rectal carcinoma, but not so often; probably because the spread of rectal carcinoma is more apt to involve the glands alongside the iliac veins and abdominal aorta rather than the glands in the lowermost retroperitoneal tissues, where lie many large nerve trunks.

Spinal metastases from breast cancer are often controlled for a time by roentgen therapy and by braces, but the pain later frequently becomes severe. The patient lies in bed without daring to move or even to allow the bedclothes to be changed, because the slightest movement of the back is excruciating.

Such pains are difficult to control with drugs. By preventing eating and sleeping, they are often the chief cause of rapid emaciation and progressive deterioration.

Chordotomy is not an entirely satisfactory procedure. There is a certain danger of bladder and rectal incontinence and other complications; and many of these patients are too sick or life expectancy is too uncertain to warrant the risk of this delicate operation. Ruth [3] recently stated that "the results (of chordotomy) seem discouraging . . . considering the risks involved." He recommends 30 per cent alcohol nerve block, carefully studying and plotting out the sensory nerve pathways involved (e. g., rectum, second to fourth sacral; bladder, twelfth dorsal to first lumbar). Gilcreest and Mullen,[4] de Takáts,[5] and others have also recommended from 15 to 30 per cent alcohol injections into the sacral canal and into the second, third, fourth and fifth sacral foramina for pelvic pain. Sometimes these injections must be repeated each week, and if another segmental nerve distribution becomes involved a different injection must be done. Others have removed the presacral sympathetic nerve (laparotomy). Subarachnoid injection is much more simple than any of these methods and is apparently quite satisfactory.[6]

I have used the method in eleven cases of far advanced malignancy: eight cervical, two spinal metastasis from breast cancer, one cancer of the prostate.

From the Mercy Hall Hospital and Tumor Clinic.

1. Yeomans, F. C.: Care of Advanced Carcinoma of the Gastro-Intestinal Tract, J. A. M. A. **101:** 1141 (Oct. 7) 1933.

2. Dogliotti, A. M.: Nouvelle méthode thérapeutique pour les algies périphériques: Injection d'alcool dans l'espace sous arachnoidien, Rev. neurol. **2:** 485 (Oct.) 1931.

3. Ruth, H. S.: Diagnostic, Prognostic and Therapeutic Nerve Blocks, J. A. M. A. **102:** 419 (Feb. 10) 1934.

4. Gilcreest, E. L., and Mullen, T. F.: Epidural and Transsacral Injection of Alcohol for the Relief of Pain, S. Clin. North America **11:** 989-994 (Oct.) 1931.

5. de Takáts, Géza, in discussion on Ruth.[3]

6. Condamin and Arnulf (Treatment of Pain Due to Pelvic Cancer, by Injection of Nerves, Rev. de chir., Paris **51:** 635-650 [Oct] 1932; abstr. Am. J. Cancer **20:** 455 [Feb.] 1934) have classified pain in patients with pelvic cancer into three types: (*a*) limited to perineum and anal regions, attributable to the last branches of the sacrococcygeal plexus—relieved by epidural injection. (*b*) Corresponding to the sacral plexus: pain in pelvis with sciatic radiation down the buttock and the posterior surface of the thigh: relieved by injection of second sacral root. (*c*) Corresponding to lumbar and sacral plexus: more diffuse pelvic pain and diffuse radiation down genitocrural and femorocutaneous nerves; relieved with more difficulty by injection of first and second sacral root, plus paravertebral injections along the lumbar nerves. I have recently relieved two patients with rectal carcinoma, in whom pain was limited to the coccyx and perineum, type *a*, by an epidural injection of the solution that these authors recommend (94 per cent alcohol, 20 cc.; menthol, 0.1 Gm.; procaine hydrochloride, 0.2 Gm.; from 1 to 4 cc. of this solution is used). Type *c* I feel is much more simply handled by intraspinal absolute alcohol injection. I have not had any cases that were recognized as corresponding exactly to type *b*, but the point is worth bearing in mind. As noted, many of these cases later spread upward and involve more nerves.[4]

Concerning ill effects, except for occasional transient signs of intraspinal irritation I have found no immediate ill effects. (One patient had mild nausea and headache for two days.) There is usually burning for a few seconds as the alcohol is first introduced. Transient paresthesias, usualiy along the outer thigh of the extremity that was uppermost as the injection was given, occurred in several cases. In five cases there was weakness of this extremity. It disappeared within from two to three days in four patients. In the fifth, a far advanced cervix case, it persisted for three weeks but gradually cleared entirely. In only one case was there bladder or rectal disturbance following the injection: In a woman with extensive spinal metastasis from breast cancer, mild abdominal distention, relieved by enemas, persisted. There was also delay in voiding. However, there was slight weakness of the left leg and some abdominal distention before the injection, so I thought these symptoms were due to cord involvement of the growth, which was extensive. In no instance was there bladder or rectal incontinence such as I have seen after chordotomy.

RESULTS

In one cervix case the injection was of no benefit. Back and leg pains started again twenty-four hours later. A second injection, given after ten days, similarly gave relief for thirty-six hours only. For the remaining three weeks of life there was excruciating pain in the pelvis, the lower part of the back and the thigh, with fever and leukocytosis. Necropsy revealed an extensive infected pelvic mass, part of which was intimately associated with and pressing on the retroperitoneal nerve plexuses. In all other cases, relief was instantaneous. Pain, frequently of a violent nature, which the patient had complained of for weeks or months, stopped immediately and was gone before the needle was withdrawn. In several cases the local lesion has progressed, causing symptoms from bladder irritability, constipation, and the like, but the severe backache has not returned. In two cervix cases, the injections were made a few weeks after back pain started and the patients were subsequently cared for at home in relative comfort for a considerable time, the local lesions meanwhile progressing. Such cases frequently require prolonged hospitalization, chiefly because of the intractable pain.

The method is applicable in terminal cases, with only a few weeks' life expectancy, since the injection is given in bed and it is only necessary to turn the patient over on the side. I have not as yet needed to repeat the injection, except in the one case in which two injections were failures. In some cases the maximum effect of the injection was not obtained for one or two weeks, transient pains persisting during this period, but gradually easing off.

I have used the first or second lumbar interspace. Most of my patients have had low back, sacral and pelvic, and sometimes low lumbar pains, with frequent sciatic radiation down the posterior thigh. In one case, pain in the right lower thoracic region, reaching to the fourth rib in the nipple line, was considerably improved but not entirely relieved following the injection.

ILLUSTRATIVE CASES

CASE 1.—*Cancer of cervix.* The onset occurred in October 1932 with intermenstrual spotting.

Examination in October 1933 revealed a severely bleeding cauliflower mass encompassing the entire cervix, with extensive involvement of the uterine adnexa and broad ligaments. Palliative radiation therapy controlled the bleeding.

January 1934, the patient had pains in the lower part of the back, which became increasingly severe, extending down the right thigh and leg as severe root pains.

February 1, the pains were increasingly severe. She required one-half grain (0.03 Gm.) of codeine, 1½ grain (0.1 Gm.) of phenobarbital or 10 grains (0.6 Gm.) of barbital by mouth, and an occasional hypodermic injection of one-fourth grain (0.016 Gm.) of morphine during the course of twenty-four hours.

One cubic centimeter of alcohol was injected into the second lumbar interspace. There were no immediate symptoms. The pain stopped immediately.

March 28, the pains in the back and down the leg had disappeared.

There is a large sloughing mass in the vagina with severe hemorrhage every week. This causes considerable bladder irritability and frequency (direct extension).

The patient is bedridden and the condition is far advanced, but she requires only an occasional phenobarbital or barbital tablet at night (rarely a morphine tablet).

In this case, severe backache and leg pains of far advanced cancer of the cervix are controlled by injection.

CASE 2.—*Cancer of cervix.* A young woman had had radium treatments in May 1933. Since then she had had repeated hemorrhages. Soon discomfort started again. In June, pain in the back started, mild at first, becoming gradually more severe. At examination in November the patient was severely anemic. The foul bleeding cervical mass had to be packed several times because of profuse hemorrhage.

She was in severe pain because of pain in the back. She would not move in bed. She cried and was irritable much of the time. She required 2 doses of dilaudid (one-sixteenth grain), 2 grains (0.13 Gm.) of codeine, 20 grains (1.29 Gm.) of acetylsalicylic acid, 2 grains of phenobarbital and 1 grain of sodium amytal during twenty-four hours.

December 3, 0.35 cc. of absolute alcohol was injected in the second lumbar interspace. There were no immediate symptoms.

December 4, she was much more comfortable. She could now be moved in bed without discomfort and was much brighter, was interested in the surroundings, and was comfortable. She asked for the first time to have her hair arranged.

December 13, the patient continued to be comfortable. Very little medication was required. There was a sudden severe vaginal hemorrhage followed by death.

This was a terminal case in which the patient was made comfortable for the final two weeks of life after having required large doses of narcotics and sedatives before injection.

CASE 3.—*Cancer of breast.* Removal of the right breast for cancer had been done in April 1932. In August 1933, severe pain developed in the right hip to the knee and the lower part of the spine and back. When the patient was examined in November, she was unable to move in bed. Roentgenograms showed pelvic and lumbar bony metastases. She required from 3 to 4 grains (0.19 to 0.26 Gm.) of codeine, from one-sixteenth to one-eighth grain (0.004 to 0.008 Gm.) of dilaudid hypodermically, occasional morphine, acetylsalicylic acid and phenobarbital in twenty-four hours.

December 2, 0.5 cc. of absolute alcohol was injected in the first lumbar interspace. There were no immediate symptoms but there was immediate relief from pain before the needle was withdrawn.

December 3, pain on the right side had gone completely. There was still slight pain in the left side. The patient moved about in bed without pain.

December 18 there was occasional pain more paresthesia than actual pain—sometimes in the right leg, sometimes in the left. No codeine was required. Occasionally acetylsalicylic acid or amidopyrine was given at night.

March 15, 1934, the patient had no trouble moving her feet in bed. She was resting comfortably except that occasionally there was transient pain, in the left hip and leg, relieved by codeine, one-half grain. The pain was not severe enough, however, for a second injection.

In this case of spinal metastasis from cancer of the breast with considerable pain, relief has been obtained for four months. The patient was comfortable in bed.

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NASAL CATHETER ADMINISTRATION OF OXYGEN

WITH OBSERVATIONS ON ALVEOLAR SATURATION

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The clinical administration of oxygen is now being employed in many disorders and is being used in the home as well as in the hospital. This has been rendered possible through the improved availability of oxygen and the development of simplified equipment for its administration.

In general, it is considered that the inhaled air must contain from 35 to 55 per cent of oxygen in order to produce therapeutic effects. To attain such oxygen percentages in the inhaled air several methods have been employed; namely the oxygen room, the oxygen tent and the nasal catheter.

The nasal catheter method is a simple means of giving oxygen but it has been criticized by many as being relatively inefficient. Barach [1] obtained a 30 per cent concentration of oxygen in the inspired air of the pharynx by means of the nasal catheter and reported that the oxygen content of the blood of patients with pneumonia could be elevated with a flow of 2 liters per minute. An oxygen concentration of 38 per cent was obtained with a 5 liter flow and Barach concluded that the nasal catheter furnished a very useful method for the administration of oxygen. Palmer [2] felt that oxygen therapy by means of the nasal catheter was effective in relieving mild degrees of anoxemia in "certain acute pulmonary conditions." Waters [3] revived our interest in the nasal catheter method by showing that with a proper pharyngeal insufflation technic an oro-

TABLE 1.—*Effects of Rate of Oxygen Flow and Respiratory Rate on Concentrations of Oxygen and Carbon Dioxide in Alveolar Air*

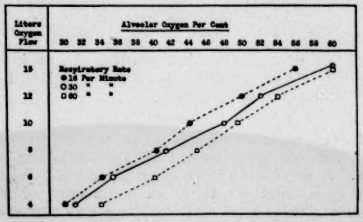
Oxygen Flow per Minute	Percentage of Alveolar Oxygen at Respiratory Rates of				Percentage of Alveolar Carbon Dioxide
	6	16	30	60	
4 liters	34	30	31	35	5.0
6 liters	46	35	37	40	5.2
8 liters	52	40	43	45	5.4
10 liters	62	44	48	49	5.3
12 liters	71	50	52	54	5.2
15 liters	74	56	60	60	5.0

pharyngeal oxygen saturation of 35 per cent could be maintained with a flow of 2 to 3 liters per minute, while with a flow of 10 liters per minute a concentration as high as 74 per cent could be attained.

It would seem that determinations of the alveolar oxygen saturation taken at different volumes of oxygen flow and at different respiratory rates should indicate whether adequate therapeutic concentrations of oxygen in the alveolar air can be obtained by the nasal catheter and the rate at which the oxygen must flow through the nasal catheter to obtain such concentrations. The following study was made to determine the efficiency of the nasal catheter method for administration of oxygen.

METHOD OF STUDY

Three normal adults were used in this study. Standard, soft, urethral catheters, sizes 12 to 14, with extra holes at the tips, were introduced into one nostril until the tip was discernable at the level of the uvula. They were then adjusted to the comfort of the subject by withdrawing slightly and fixed in place with adhesive tape. The flow of oxygen was administered from standard commercial oxygen tanks through a humidifier at 4, 6, 8, 10, 12 and 15 liters per minute. Samples of alveolar air were collected by cutting off the oxygen supply at the end of inspiration and then letting the subject expire completely, at which point air was drawn into modified Douglas bags from the nasopharynx through the same catheter (mouth closed and nasal pincher in place). The control observations on alveolar oxygen and carbon dioxide at various respiratory rates conformed very closely to those reported by Haldane [4] and his co-workers. Several series of determinations of alveolar oxygen and carbon dioxide at various respiratory rates and different rates of oxygen flow were made on each subject on different days. The carbon dioxide concentration in the samples ranged between 4.9 and 6.5 per cent with an average of 5 per cent or over, indicating that we were obtaining samples of the deep alveolar air.



The column at the left gives rate of oxygen flow in liters per minute, while the percentage of oxygen in alveolar air appears above. As the rate of flow of oxygen is increased in liters per minute, an increase of alveolar oxygen saturation occurs. Note that the oxygen saturation curves are essentially straight lines dependent on rate of flow, and this saturation is but slightly altered by changes of respiratory rate.

The determinations of oxygen and carbon dioxide were made by means of the modified Haldane instrument and the instrument by the Hays Corporation. The results obtained on each subject checked within surprisingly narrow limits, although an individual variation was noted. This difference was so small that they were all averaged and the charts show clearly the results obtained.

The figures given in table 1 show a rising concentration of oxygen in the samples drawn from the nasopharynx as the rate of flow through the catheter was increased. The individual protocols are omitted because of the similarity of the results obtained in each subject. The table does not include the observations made on

The Linde Air Products Company donated a liberal supply of oxygen for use in these experiments.
Read before the Chicago Society of Internal Medicine, March 20, 1934, and the American College of Physicians, April 17, 1934.
From the departments of medicine and physiology of Northwestern University Medical School and the oxygen service of Passavant Memorial Hospital.

1. Barach, A. L.: Administration of Oxygen by Nasal Catheter, J. A. M. A. **93**: 1550 (Nov. 16) 1929; Methods and Results of Oxygen Treatment in Pneumonia, Arch. Int. Med. **37**: 186 (Feb.) 1926.
2. Palmer, R. S.: Oxygen Therapy in Treatment of Pneumonia and Postoperative Pulmonary Complications, New England J. Med. **200**: 330 (Feb. 14) 1929.
3. Wineland, A. J., and Waters, R. M.: Oxygen Therapy: Insufflation into Oral Pharynx, Arch. Surg. **22**: 67-71 (Jan.) 1931.
4. Haldane, J. S.: Respiration, New Haven, Yale University Press, 1922.

the administration of oxygen under 4 liters per minute because the concentrations were below the levels of probable therapeutic effect. The alveolar oxygen saturations were not greatly altered by nasal or oral breathing in a similar series of observations.

The respiratory rate does not seem to affect greatly the alveolar concentration except that with a respiratory rate of six per minute the alveolar concentrations were all found to be increased. The results obtained indicate that alveolar saturations of 35 per cent may be obtained with a rate of flow of about 6 liters per minute and the usual desired concentration of 50 per cent requires a flow of from 10 to 12 liters per minute. This rate of flow was well tolerated for hours at a time. It was our experience that such a flow may be comfortably maintained for from three days to three weeks if the oxygen is well humidified and if the nasal cavity and oropharynx are sprayed at intervals of from one to two hours with liquid petrolatum from an atomizer. It is desirable to cleanse the catheter and to change it from one nostril to the other at least every twelve hours. Oxygen concentrations of 60 per cent or over in the alveolar air required a flow of from 14 to 16 liters per minute. The figures given in the chart are arranged graphically to indicate at a glance the concentration of oxygen in the alveolar air determined by the rate of flow, so that a desired alveolar saturation may be obtained promptly by adjusting the flow in liters per minute as indicated in the column at the left.

Oxygen concentrations of 60 per cent or over in the alveolar air required a flow of from 14 to 16 liters per minute. Some difficulty was encountered in keeping the pharynx from becoming uncomfortably dry when such rates of flow were employed. It is the impression of the observers that such high concentrations of alveolar oxygen, although often required clinically, would be difficult to maintain for long periods of time in the average patient without the use of an efficient humidifying equipment. However, no ill effects other than the discomfort described have been noted from any rate of administration.

TABLE 2.—*Oxygen and Carbon Dioxide Concentrations in Tent and Alveolar Air*

Respiratory Rate	Percentage of Oxygen in Tent	Percentage of Carbon Dioxide in Tent	Percentage of Oxygen in Alveolar Air	Percentage of Carbon Dioxide in Alveolar Air
Normal breathing.....	40.0	1.50	41.0	Not stated
	41.0	1.50	39.5	5.75
	45.0	2.00	44.0	5.25
	49.0	1.20	50.0	5.25
	50.0	0.20	45.0	5.10
	51.0	2.40	49.7	4.50
	52.0	2.50	51.0	5.50
	53.0	3.20	60.0	5.00
	54.0	2.50	52.0	4.25
	55.0	2.50	53.0	5.25
	56.0	3.00	56.0	5.00
	58.0	3.00	51.0	5.00
	60.0	3.00	60.0	5.00
	63.0	3.50	60.0	5.00
	65.0	3.00	63.0	5.00
30.....	51.5	2.80	52.0	5.50
60.....	52.5	3.00	51.4	4.80

Similar determinations of alveolar oxygen and carbon dioxide were made on ourselves in oxygen tents. The concentrations of oxygen in the air of the tent was varied from 40 to 65 per cent. The alveolar oxygen concentration was found to be essentially the same as that of the air of the tent. The alveolar oxygen concentrations were found usually to be about 1 to 3 per cent below the concentration of oxygen in the tent; hence the oxygen concentration of the tent atmosphere may be roughly stated as a close index of alveolar oxygen saturation. The respiratory rate did not alter this relation perceptably. The tent, therefore, is much the more economical method of administering therapeutic concentrations of oxygen from the standpoint of the volume of gas required. This fact, however, must be weighed against the objections of the cost, upkeep and difficulty in operation of the tent as compared to the catheter, as well as the fact that this method is not adapted to the treatment of certain patients, such as those who are delirious or orthopneic, and who may be well supplied by the catheter. Each method has certain advantages and disadvantages, which will be discussed elsewhere.

CONCLUSIONS

1. Oxygen saturations of from 30 to 60 per cent in the alveolar air are readily obtained by pharyngeal insufflation with the use of the nasal catheter.
2. Oxygen saturations of 50 per cent in the alveolar air are obtained by nasal catheter only with an oxygen flow of from 10 to 12 liters per minute.
3. Similar observations made in the tent indicate that the alveolar saturation is roughly that of the tent atmosphere.

301 East Superior Street.

TRAUMATIC SUBDURAL HEMATOMA

AN EXPLANATION OF THE LATE ONSET OF PRESSURE SYMPTOMS

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AND
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The clinical and pathologic aspects of traumatic subdural hematoma have received full consideration in many previous reviews. Various authors have emphasized the fact that cranial injury may be attended by little or no symptomatology at the time but that evidence of increased intracranial pressure may develop long after the original trauma. Therefore it is not unusual for these patients to be symptom free for several months before developing signs of an intracranial lesion. Various theories have been proposed to explain the prolonged "latent period." Our studies on a patient with bilateral subdural hematomas offers evidence that satisfies the clinical and experimental requirements as an explanation for the latent period so characteristic of this condition.

It has been generally agreed that the delayed onset of clinical symptoms is dependent on an augmentation in volume of the blood that is entrapped in the subdural space. Some clinicians believe that repeated bleeding accounts for enlargement of the subdural hemorrhage, but there is little pathologic evidence to support this view in the majority of cases. Gardner[1] recently showed that the sac which forms about such a collection of blood has the characteristics of a semipermeable membrane. He believed that the enlargement of the sac depended on the passage of tissue fluids into the

From the Surgical and Pathological Services, Peter Bent Brigham Hospital.

1. Gardner, W. J.: Traumatic Subdural Hematoma, with Particular Reference to the Latent Interval, Arch. Neurol. & Psychiat. 27: 847-858 (April) 1932.

hematoma as a result of differential osmotic tension existing between whole blood and cerebrospinal fluid when they are separated by a semipermeable membrane. Since the hematoma sac probably forms very rapidly after the original hemorrhage, it is reasonable to expect that any difference in osmotic tension between the enclosed whole blood and the neighboring cerebrospinal fluid would be compensated for in a day or two after the membrane is completed. Therefore, Gardner's

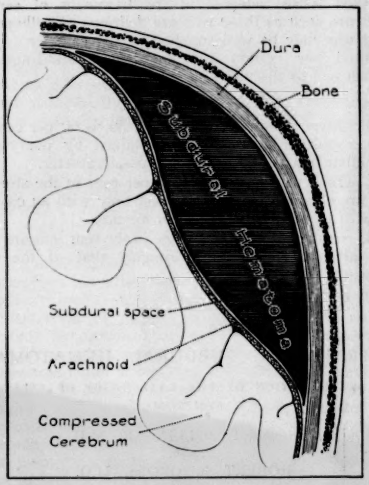

Fig. 1.—Schematic coronal section showing position of the hematoma between the dura and the pia-arachnoid.

theory explains an early, small acquisition of fluid but it does not explain the gradual increase that takes place over a period of months.

The inference has been made by Putnam[2] that disintegration of blood in the hematoma is of prime importance, for this results in a greatly increased osmotic pressure which is responsible for drawing fluid into the sac. The observations made in the following case of bilateral subdural hematoma tend to substantiate the latter view:

REPORT OF CASE

History.—C. L., a white man, aged 46, was referred to the Peter Bent Brigham Hospital, Oct. 19, 1933, by Dr. Roger Spaulding of Duxbury, Mass., for treatment of a suspected tumor of the brain. The patient had enjoyed excellent health and was active as a roof inspector until July 26, 1933, when headaches occurred over the right temporal region, which radiated upward toward the top of the head. There had not been any single severe cranial trauma, but he had been in the habit of raising trap doors with his head while climbing up to roofs. It is likely that the later discovered intracranial hemorrhage was sustained during one of these rather insignificant injuries. The headaches increased in severity and on August 1, while on a vacation, he became confused and temporarily wandered away from his family. He returned to work, August 18, but did not feel rested. September 15 he suffered a temporary numbness and shooting pain in the left knee and had difficulty in speech for a few minutes. The headaches subsequently increased in severity but were temporarily relieved on several occasions by nausea and vomiting. A gradual diminution in vision developed, and on October 5 diplopia was noticed. The symptomatology was that of increased intracranial pressure which had progressed over a period of at least three months without definite localizing signs.

Physical Examination.—The patient was intelligent, euphoric and talkative. He was in good general physical condition. The pupils were dilated to 7 mm. but were equal and regular and reacted to light and in accommodation. There was bilateral choking of the optic disks to 4 diopters. The remainder of the general neurologic examination was essentially negative.

Laboratory Examination.—Wassermann and Hinton reactions of the blood and ventricular fluid were negative. The total protein content of the ventricular fluid was 20 mg. per hundred cubic centimeters and the cell count was 3 lymphocytes per cubic millimeter.

TREATMENT

Diagnosis.—The diagnosis of a right frontal tumor was made but in the absence of definite localizing signs ventriculography was performed on October 21 under local anesthesia. The right ventricle was tapped, clear fluid was obtained and air was injected. A needle was not passed through the left trephine opening because of a bluish discoloration beneath the dura, which at that time was thought to be a large vein. The ventriculogram showed marked displacement of the third and lateral ventricles to the left. Despite this marked displacement in the anterior-posterior view, the ventricles were not distorted in the lateral view. Dr. Merrill C. Sosman interpreted these observations as indicating an extensive superficial lesion, possibly a hematoma.

Operation.—A large frontoparietal bone flap was turned down under procaine hydrochloride anesthesia the same day by one of us (R. Z.). A large encapsulated subdural hematoma was found extending from the frontal region almost to the occipital lobe and triangularly downward toward the floor of the middle fossa (fig. 1). The sac was easily peeled from the dura and the underlying arachnoid. A subtemporal decompression was done and the bone flap was sutured back into place. The postoperative course was uneventful except for rather pronounced euphoria.

We recalled the bluish discoloration beneath the dura on the left side at the time of ventriculography, and knowing that subdural hematomas are frequently bilateral, a diagnosis of a left sided hemorrhage also was made and a second operation advised. Twenty days after the first operation, a small occipitoparietal bone flap was reflected (by R. Z.) and a smaller

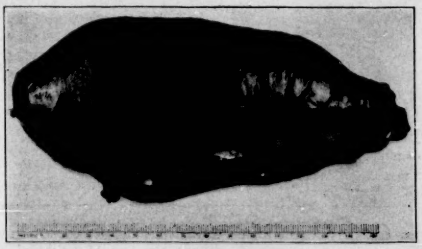

Fig. 2.—Right subdural hematoma.

encapsulated hematoma was removed intact from the left occipitoparietal region. The patient's postoperative course was uneventful and the euphoria promptly disappeared. He has remained symptom free six months since the last operation and has returned to work.

PATHOLOGIC STUDIES

Right Subdural Hematoma.—Gross Examination: The specimen was a flattened, ovoid, fluid-containing sac measuring 16 cm. in length, 7.5 cm. in maximum width, and 1.5 cm. in maximum thickness (fig. 2). When immersed in saline solu-

2. Putnam, T. J., in discussion on Gardner.[1]

tion it displaced 120 cc. of fluid. Its walls were fibrous but did not measure over a millimeter in thickness. The thin enveloping membrane and the fluid character of the cyst contents gave the sac a very flabby consistency. The flattened surface, which had been pressed against the arachnoid, was smooth and glistening. The surface that had been adjacent to the dura was somewhat dull, slightly roughened, and a little irregular in contour. The hematoma was dark red, but in a few areas there were brownish and greenish deposits of blood pigments. The hematoma fluid was thin and dark reddish

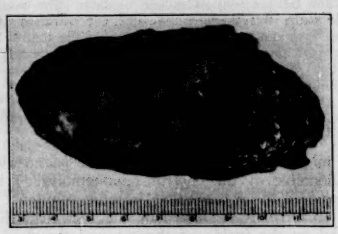

Fig. 3.—Left subdural hematoma.

brown. It resembled dilute, partially hemolyzed and disintegrated blood. Cultures of this fluid were sterile.

Microscopic Examination: The membrane of the sac was composed of dense fibrous tissue, which often was hyalinized. The dural side was thicker and more plentifully supplied with vessels than that which had been contiguous to the arachnoid. In some places a thin organized blood clot was found on the inner surface. The wall had occasional infiltrations of polymorphonuclear leukocytes and lymphocytes. A few macrophages contained blood pigment.

Left Subdural Hematoma.—Gross Examination: The specimen was an ovoid, flattened hematoma measuring 9 cm. in length, 4 cm. in greatest width and 1.1 cm. in maximum thickness (fig. 3). Except for the smaller size, the general appearance was similar to the one that previously had been removed from the right side of the head. Again, the surface adjacent to the arachnoid was smooth as contrasted to the dural surface, which was a little irregular and rough. The walls were less than a millimeter in thickness. Though the external surface was mostly a dark red, there were scattered mottled areas of reddish brown and green deposits of altered blood pigment. The cavity contained diluted fluid blood. Cultures of this were negative.

COMMENT

We believed that chemical examination of the contents of the hematoma sac might offer some explanation for the increase in size of the sac, which must have occurred to explain satisfactorily the clinical course. Determinations made on the right hematoma, in which the entire fluid including the serous portion and remaining red blood cells was used, were as follows: total protein, 8 Gm. per hundred cubic centimeters; globulin, 5.1 Gm. per hundred cubic centimeters; albumin, 2.9 Gm. per hundred cubic centimeters; nonprotein nitrogen, 31 mg. per hundred cubic centimeters, and chlorine as sodium chloride, 615 mg. per hundred cubic centimeters.

The total protein in normal whole blood is approximately 18.5 Gm. per hundred cubic centimeters of blood. This includes the plasma protein, which consists of approximately 2.8 Gm. of albumin, 0.95 Gm. of globulin and 0.25 Gm. of fibrinogen per hundred cubic centimeters of whole blood. The hemoglobin of the cells accounts for the additional 14.5 Gm.

The whole blood, then, which originally comprised the subdural hemorrhage had a total protein value of from 18 to 19 Gm. In contrast to this, the hematoma sac fluid as found at operation had a total protein content of only 8 Gm. This important difference may be accounted for in two ways. First, that a portion of the encysted blood had been reduced to substances that could diffuse out of the sac and hence lessen the remaining total protein value. Second, that the contents of the sac had been diluted. Both factors may have played a part to bring about the observed changes, but it is likely that the latter process was the more important one. The reduction of the hematoma total protein figure from 18-19 Gm. to 8 Gm. is probably a fair indication that the blood originally in the cyst had been diluted about two and a third times, or, conversely, that the volume of the hematoma had increased to about two and a third times its initial size.

Chemical examination was subsequently made on the material removed from the left subdural hematoma. The total protein value of the whole fluid was 6 Gm. per hundred cubic centimeters. It may again be inferred that dilution had taken place and the reduction from 18-19 Gm. to 6 Gm. of protein indicated a dilution of three times, or a corresponding increase in volume of the cyst to about three times its original size.

The left sided subdural hemorrhage presumably occurred at the same time as did the right one, but it remained undisturbed in the subdural spaces for twenty days longer than the right one. Coincidental with this longer stay in the subdural space there was a greater dilution in the left sac. One therefore suspects that the fibrous wall of such a hematoma acts as semiper-

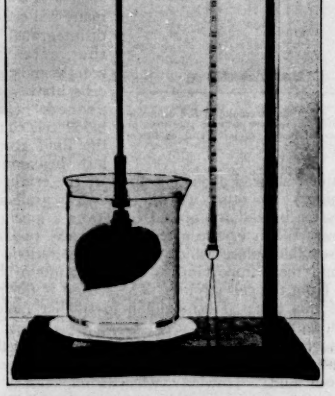

Fig. 4.—Apparatus employed for testing left subdural hematoma as a semipermeable membrane.

meable membrane, which permits the ingress of water and crystalloids but does not allow protein to escape.

In order to study some properties of the membrane, the left hematoma sac was emptied of its contents and refilled with oxalated whole blood (by R. G.). A small bore manometer tube was tied into one end of it and the sac then immersed in a beaker of 0.9 per cent sodium chloride and 0.1 per cent sodium oxalate (fig. 4). Observations over a twenty-four hour period showed

a maximum rise to 15.5 cm. in the manometer tube. Frequent tests on the external fluid with 2 per cent tannic acid showed the bath to be protein free. These facts demonstrated that the membrane allowed the passage of water and sodium chloride into the sac but did not allow egress of the protein molecules.

It is shown from the preceding discussion that the hematoma wall acts as a semipermeable membrane and that the contents of the sacs had been diluted. In order to complete the chain of pathologic processes, the factor must be found that induces fluid to distend such a cyst many months after the original hemorrhage. It has been well known that red blood cells may remain intact for long periods of time when encysted within these hematomas. It is commonly observed that when found soon after their formation these extravasations contain practically whole blood, that after a few months many red cells have disintegrated, and that after many months most of the cells have disappeared. (A red blood cell count on the fluid from the left hematoma of our patient showed about one fifth of the erythrocytes remaining.) In other words, there is a gradual and progressive breakdown of red cells over a long period of time. When erythrocytes disintegrate, two major processes take place which need consideration. The first, and most important, is the liberation of hemoglobin from the cell stroma. The second is the reduction of this released hemoglobin to smaller molecular protein aggregates.

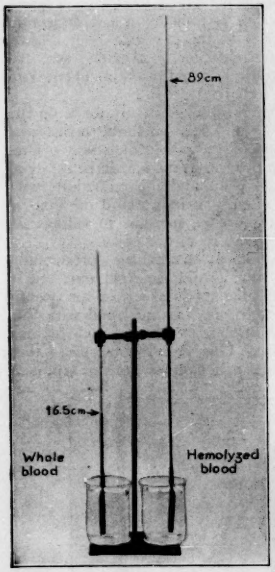

Fig. 5.—Apparatus employed for comparative studies on relative osmotic pressures of nonhemolyzed blood (at left) and of hemolyzed blood (at right).

Hemoglobin, when present within the red cell, has little effective osmotic tension with relation to surrounding tissue fluids. However, when hemoglobin is liberated from the limiting cell membrane it has a distinctly higher effective osmotic pressure. The following experiments were undertaken (R. G.) to demonstrate this change in effective osmotic pressure when hemoglobin is released from the red cells:

Human whole blood was treated with oxalate crystals to prevent its coagulation. Powdered sodium oxalate was added in amounts of 100 mg. per hundred cubic centimeters of blood. This blood was then divided into two portions. Half of it was treated with chemically pure saponin, which is a powerful hemolyzing agent even in dilutions of 1:100,000 parts of blood. A few milligrams of this material per hundred cubic centimeters of blood was sufficient to cause complete hemolysis in a few minutes. This small amount of added saponin had no intrinsic osmotic pressure effect, as shown by appropriate studies. The second half of the blood was not treated with saponin and was used as a control.

These two specimens of blood, one completely hemolyzed and the other normal, were placed in semipermeable membrane sacs of cellophane 600 seamless tubing. Each of these sacs was then attached to a small bore manometer tube and each was placed in a bath (fig. 5) consisting of 0.9 per cent sodium chloride and 0.1 per cent of sodium oxalate. The oxalate in the outer baths was then of the same concentration as that within the sacs and prevented coagulation of the control blood. Each piece of apparatus was maintained at room temperature. Observations showed maximum rises in the two manometer tubes within eighteen to thirty hours. Repeated experiments gave an average rise of 16.5 cm. for the nonhemolyzed blood, compared with an average rise of 89 cm. for the hemolyzed blood.

One might expect that there should be no rise in the manometer of the control (nonhemolyzed) blood when exposed to an essentially isotonic solution. This rise of 16.5 cm. is explained by the fact that, though the blood on the inside of the sac and the fluid surrounding the sac have essentially the same osmotic pressure when examined by freezing point methods, yet when they are placed on opposite sides of a semipermeable membrane the protein is held back while the sodium chloride diffuses through and is present on both sides of the membrane in proportions that follow the law of Donnan's equilibrium.

The reduction of hemoglobin molecules, as mentioned previously, also has a considerable bearing on the subject under discussion. The molecular weight of this substance has been estimated to be at least 16,000 and by some authorities is said to be as high as 64,000. When this huge molecule breaks down, a very large number of smaller aggregates are formed, and the molecular concentration per unit of space is thereby greatly increased. Since osmotic pressure is directly proportional to the molecular concentration of a fluid, it follows that the disintegration of hemoglobin, to a certain point, is attended by an enormous rise in osmotic tension.

The following series of events represent the conditions as we believe them to occur in these subdural hemorrhages: A head injury, often so trivial that it is forgotten, causes a rupture of a vein as it crosses the subdural space. A large hemorrhage then occurs and the entrapped blood is rapidly surrounded by a fibrinous wall, which is later organized to a fibrous and vascularized structure. The wall, acting as a semipermeable membrane, permits passage of fluid into the cyst to compensate for the differential osmotic tension that exists between whole blood and adjacent tissue fluids. This first stabilization occurs fairly rapidly. The encysted red cells then gradually and slowly disintegrate

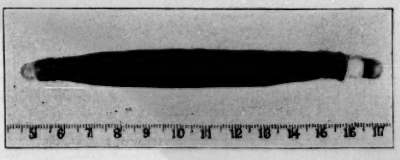

Fig. 6.—Cellophane tubing sac employed to measure amount of fluid that blood absorbs by osmotic tension (when immersed in physiologic solutions).

over a period of several months and this process causes a slow but great rise in the osmotic tension of the hematoma fluid, which is compensated for by the acquisition of fluid from the surrounding structures. The resulting late increase in volume of the hematoma causes late onset of symptoms by direct pressure on the adjacent brain and by increasing the general intracranial tension.

The following experiments were undertaken in order to gain some idea of the amount of fluid that blood might take up by osmotic tension:

About 1 cc. of oxalated whole blood was placed in a cellophane sac and the ends were sealed (fig. 6). This sac was then placed in a bath of 0.9 per cent sodium chloride and 0.1 per cent sodium oxalate. Weights were made of (1) the sac, (2) the sac plus the blood, (3) the sac and its contents after immersion in the bath for from twenty-four to thirty-six hours. When nonhemolyzed blood was employed there was an average of 90 per cent increase in weight of the blood after the immersion. When (saponin treated) hemolyzed blood was placed in such a sac and subjected to the same immersion, the increase in weight averaged 230 per cent (final fluid weight was three and a third times that of original blood weight).

From these observations it seems reasonable that subdural hematomas may in a similar manner increase to two or three times their original volume.

Gardner stated that the fluid which entered the subdural hematoma was derived from the surrounding tissues and particularly the cerebrospinal fluid. It would seem likely, however, that the added substance may come in part from the plasma of the circulating blood. As has often been noted, there is a rich vascular capillary system within the walls of the hematoma sac. By microscopic examination, many of these vessels are seen to lie very close to the lumen of the cyst and conditions appear to be favorable for an exchange of fluid between these capillaries and the contents of the sac. It would appear more logical for the necessary fluid to come from these capillaries rather than from the arachnoidal spaces by traversing the arachnoid and the hematoma sac wall. Ordinarily the cerebrospinal fluid does not pass through the arachnoid into the subdural space. The effect of a close approximation of a hematoma sac to the external surface of the arachnoid is unknown, but it is not necessary to draw upon an unknown factor for a ready means for exchange of fluids; namely, from the capillary networks of the hematoma wall.

SUMMARY AND CONCLUSIONS

Evidence is presented from clinical and experimental observations made from a case of bilateral subdural hematoma that (1) the wall of a subdural hematoma acts as a semipermeable membrane, (2) blood within a subdural hematoma breaks down slowly over a period of months, (3) disintegration of blood produces a great rise in its effective osmotic pressure, and (4) blood within a subdural hematoma is progressively diluted.

It is believed that progressive liberation of hemoglobin from the erythrocyte stroma and subsequent disintegration of the hemoglobin molecule increase the osmotic tension in a hematoma sac over a period of months and that fluid is therefore gradually drawn in from the surrounding structures. The resultant augmentation in size of the lesion causes rising intracranial pressure and progression of clinical symptoms. The late onset of symptoms is therefore directly dependent on the slow disintegration of red blood cells encapsulated within the hematoma membrane.

AGRANULOCYTIC ANGINA FOLLOWING INGESTION OF DINITROPHENOL

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During recent months the medical literature has been characterized by numerous reports of cases illustrating unfavorable reactions and deaths following the use of dinitrophenol, the barbiturates and amidopyrine. In the instances of these reactions following therapy with the barbiturates and amidopyrine, several observers have cited a resulting neutropenia or agranulocytic angina. There is reference made, however, to only one case of agranulocytic angina following the ingestion of dinitrophenol.[1] The report includes a case in which agranulocytosis developed after the ingestion of dinitrophenol over a period of two weeks, the patient recovering following treatment. Since no mention was made in this case regarding the amount of the drug taken during the two weeks or of the blood picture, and since in no other report of dinitrophenol poisoning has there been reference made to an ensuing neutropenia (those reports including a blood picture showed essentially normal white blood counts, while the remaining reports did not include any data concerning the white blood cells), a case of agranulocytic angina following the ingestion of dinitrophenol is here submitted.

REPORT OF CASE

History.—C. P., a Jewish girl, aged 19 years, single, a stenographer, who entered St. Joseph's Mercy Hospital, May 4, 1934, complained of a severe sore throat, hoarseness and dysphagia. She was brought into the hospital by her physician, Dr. F. L. Arner, who stated that she had been taking "Nitraphen" (the sodium salt of 2, 4 *di*nitrophenol) in order to reduce her weight. The following history was then obtained:

Eighteen months before admission her weight had been 181 pounds (82.3 Kg.), this being the most she had ever weighed. At that time she was 18 years of age. She went on a diet and experienced a progressive loss of weight to 162 pounds (73.6 Kg.) within eight months. Her weight fluctuated about this point till four months before admission, when she states that a relative informed her of a person who had been taking dinitrophenol and had lost weight without ill effects. She was also told that this person's physician had "analyzed" the drug, found it to be "all right" and was himself using it in order to lose weight. Our patient bought a bottle of "Nitra-phen" containing fifty capsules, each capsule containing 100 mg. (0.1 Gm.) of 2, 4 *di*nitrophenol sodium. She did not seek a physician's advice nor did she ask the druggist from whom she bought the drug regarding the dosage. The label on the bottle stated: "The usual dosage—1 to 3 capsulets per day, taken with meals, and after a week's interval increase medication as necessary until a weight loss of 2 or 3 pounds weekly is produced. Three capsulets per day will usually produce an average weight loss of 2 or 3 pounds weekly." There was on the label a reference to THE JOURNAL.[2]

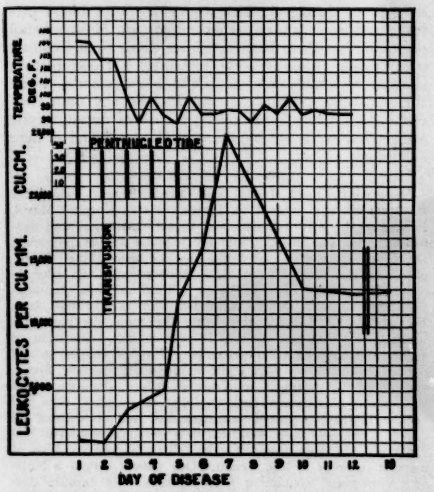
Her weight at this time was 166 pounds (74.5 Kg.), and she started by taking one capsule three times a day following meals for the first two weeks. The dosage was then increased to twice that amount for a week but with no loss in weight. She began to menstruate and, feeling quite miserable, stopped taking the drug. With the completion of her period she resumed the ingestion of two capsules three times a day for two weeks but began to perspire freely, feeling warm even in cold weather, and still with no loss in weight. She stopped medication and resumed its ingestion as before in two weeks. She perspired continuously, even while scantily clothed in cold

From St. Joseph's Mercy Hospital.

1. Hoffman, A. M.; Butt, E. M., and Hickey, N. G.: Neutropenia Following Amidopyrine, J. A. M. A. **102**: 1213 (April 14) 1934.
2. Tainter, M. L.; Stockton, A. B., and Cutting, W. C.: Use of Dinitrophenol in Obesity and Related Conditions, J. A. M. A. **101**: 1472 (Nov. 4) 1933.

weather. She felt tired but attributed this to the fact that she was working hard in her office After ten weeks of medication in this manner she contracted a cold and at the same time noticed a rash on the neck, chest and anterior surfaces of the arms. The rash was a maculopapular eruption and was quite pruritic. She did not go to a physician but stopped the drug and applied an alcohol rub, which relieved the itching. Several days later she noticed a patch on her left shoulder and one on her right arm, these patches being covered with what she termed "blood blisters." She felt warm, but since her temperature was not determined with a thermometer the degree of fever could not be ascertained.

All these symptoms eventually disappeared and six weeks before admission she again started using 2, 4 dinitrophenol sodium as before. In ten days she again experienced a pruritic macular eruption on the chest and neck, as well as "blood blisters" beneath her breasts. She felt extremely warm and complained of a sore throat. Stopping the drug and visiting a physician, she was told that she had a streptococcic sore throat and therapy was instituted in the form of bed rest for two days, gargles, swabbing of the throat and the taking of



Clinical course in case of agranulocytic angina following ingestion of 2, 4 dinitrophenol sodium.

some white pills. She then noticed a red and slightly pruritic rash along the anterior surfaces of both legs. On getting out of bed at one time she felt dizzy and fainted. Occasionally she became nauseated but did not vomit.

By this time she had taken the contents of four bottles of "Nitra-phen." On purchasing the fifth bottle ten days before admission she again started ingestion of the drug as before until eighteen capsules had been taken, when she experienced another onset of the menses, this one coming on two weeks early. (Her previous menstrual periods had been essentially normal, coming on about once a month, although rarely she was one week early or one week late but not during the past four months. The menses usually extended over a period of two days and were characterized by cramps, headaches, dizziness and some fatigue, but no bed rest was ever required.) This menstrual period had its onset four days before her admission and was associated with a sore throat, headache and fever. Her weight was 158 pounds (71.8 Kg.). She went on a picnic that night but was forced to come home early. She was worse the following morning and went to her physician, who gave her some pills, swabbed her throat and advised gargles. She returned to bed, became worse that night and had no appetite. She became very hoarse, could not swallow solids and had a fever of 104 F. The hoarseness increased until she could only whisper. The menses stopped two days before her admission, but the hoarseness, temperature, dysphagia and soreness of the throat became progressively worse until she was admitted, at which time she weighed 154 pounds (70 Kg.). She had stopped the use of 2, 4 dinitrophenol sodium four days previously.

There was nothing significant in the past history, and there was no history of allergy.

Physical Examination.—At examination the patient was slightly overweight; she perspired freely and had a temperature of 104.4 F. She was very hoarse, speaking only in a whisper and having difficulty in opening her mouth wide. There was some cyanosis about the lips, but no rashes. The patient was oriented and answered questions intelligently but dozed off easily. The remainder of the general examination was not significant. The blood pressure and a basal metabolic rate were not taken. The heart and lungs were normal. The patient was referred to Dr. A. C. Furstenberg, professor of otolaryngology, University of Michigan, who submitted the following report:

"On admission to the hospital the patient's throat gave the following appearance: Both tonsils were covered with a white membrane. It was diffuse and extended on to both pillars on both sides. The spread of the membrane was not unlike that of diphtheria, although its color was not characteristic of a Klebs-Loeffler infection. There was marked hyperemia of the pillars, soft palate and posterior wall of the pharynx. Because of the extensive inflammatory process, together with marked prostration of the patient, a tentative diagnosis of agranulocytic angina was made.

"Forty-eight hours following admission a rather extensive ulceration occurred within the upper pole of the right tonsil and the adjacent pillars and soft palate. This ulceration was large enough to admit the index finger in the region of the supratonsillar fossa. It involved considerable of the soft palate in this region. There was a similar ulceration on the left side, only it was considerably smaller."

Laboratory Examination.—Examination of the urine showed albumin, three plus. The sediment was loaded with granular casts and contained from fifteen to twenty pus cells per high power field.

A blood count revealed: hemoglobin, 103 per cent (Sahli); red blood cells, 4,860,000 per cubic millimeter; white blood cells, 1,150 per cubic millimeter. In the differential count fifty cells were counted, of which forty were lymphocytes and ten were large mononuclear leukocytes.

A smear from the throat showed mixed bacterial flora; culture of the throat smear showed mixed staphylococci and streptococci but no Klebs-Loeffler bacilli.

The Kahn test of the blood was negative.

Progress in the Hospital.—For three days the patient was given hot saline throat irrigations, powdered acetylsalicylic acid to the back of the tongue and an ice collar about the neck. An attempt was made to force fluids by mouth at the beginning. Twenty cubic centimeters of pentnucleotide was given twice daily, intramuscularly for four days, 30 cc. on the fifth day and 10 cc. on the sixth day. On the second hospital day a blood transfusion of 250 cc. of whole blood was given as well as an intravenous infusion of 500 cc. of 5 per cent dextrose. On the third day 1,000 cc. of physiologic solution of sodium chloride was given subcutaneously, and when the patient became irrational morphine sulphate, one-fourth grain (0.016 Gm.), was given hypodermically. Late that evening she became quite restless. The temperature was 100 F., respirations were 20 per minute and the pulse was 90 per minute but irregular. She was given digifolin and then put into an oxygen tent, following which the cyanosis decreased, her respirations became easier and she took more fluids by mouth.

May 7, the blood pressure was 112 systolic and 72 diastolic. She received 100 cc. of 50 per cent dextrose intravenously. On this day she was seen by Dr. Raphael Isaacs of the Simpson Memorial Institute, University of Michigan, who reported the following: "Red blood cells, 4,240,000 per cubic millimeter; white blood cells, 5,500 per cubic millimeter; hemoglobin, 88

per cent (Sahli); polymorphonuclears (neutrophil), metamyelocytes and immature forms, 52 per cent; large lymphocytes, 6 per cent; small lymphocytes, 31 per cent; monocytes, 11 per cent; eosinophils, 0. There was an extreme degree of basophilia of the granules of the polymorphonuclears, suggesting septicemia. Platelets were increased in number. The red blood cells were essentially normal. There was marked rouleau formation. The impression was that the condition as seen was the recovery phase in malignant neutropenia with septicemia."

The urine showed decreasing amounts of albumin, pus cells and casts till the specimens were normal after one week of treatment.

The data in the accompanying table concern the white blood cells during treatment:

White Blood Cells During Treatment

Date	White Blood Cells per C.Mm.	Percentage of Adult Polymorphonuclear Neutrophils
May 4 (day of admission)	1,150	0
May 5	1,000	5
May 6 (a. m.)	3,550	5
May 6 (p. m.)	3,950	4
May 7	4,400	6
May 8	12,700	5
May 9	16,700	12
May 10	25,400	28
May 11	21,150	25
May 13	13,200	44

Dr. Furstenberg's final report was that during convalescence these ulcers healed very slowly, and when the patient was discharged from the hospital the membrane had entirely disappeared but that there was still a small ulceration on the right side. This, however, was clean and appeared to be healing slowly but satisfactorily.

Since the patient was known to have taken other drugs, an effort was made to ascertain their relation to her illness. The only drugs she had taken recently were "anacin" (acetphenetidin, an acetanilid derivative with acetylsalicylic acid, quinine and caffeine), acetylsalicylic acid and 2, 4 (*di*nitrophenol sodium. She usually took one or two tablets of "anacin" during her menstrual periods in order to obtain relief from the cramplike pains but stated that the last time she used this drug was during her menstrual period six weeks before admission. She discontinued this drug because she found that acetylsalicylic acid gave her almost as much relief, and she has been in the habit of taking from 5 to 10 grains (0.32 to 0.65 Gm.) during the menses. Since acetylsalicylic acid was used freely during the treatment and the patient made a good recovery, it may be assumed that this drug probably had no etiologic bearing concerning the neutropenia.

All indications thus point toward 2, 4 *di*nitrophenol sodium as being the only drug responsible for her illness. Over a period of four months she took 21,800 mg. (21.8 Gm.), usually starting by taking one capsule (0.1 Gm.) three times a day for two weeks and then doubling the dosage for one or two weeks. She would then experience unfavorable reactions such as a feeling of warmth, perspiration, fatigue, sore throat, vertigo and a pruritic maculopapular eruption of the skin. The blood pressure was not taken. When the ingestion of the drug was stopped, these symptoms would disappear within two or three weeks but would recur when the process was repeated. There was no yellowish discoloration of the skin, as has been reported by some observers.

It is significant to note that, by dieting, the patient was safely able to lose 19 pounds (8.6 Kg.) within eight months, while she lost only 12 pounds (5.4 Kg.) over a period of four months, during which time she took a total of 21.8 Gm. of 2, 4 *di*nitrophenol sodium and which resulted in an extreme neutropenia. During this period of four months she did not adhere to rigid dietary reduction measures but made an attempt to exclude only fattening foods. It is also significant that the initial dosage in this case corresponded to that advised by Cutting.[3] Weighing 75 Kg. four months before and starting with a dosage of 300 mg. (0.3 Gm.) a day, she was ingesting 4 mg. per kilogram of body weight daily for the first two weeks and then increased this to 8 mg. per kilogram of body weight daily till the unfavorable reactions appeared, usually within two weeks following the increase in dosage. Cutting[3] stated that in his eight cases single doses of from 3 to 5 mg. per kilogram of body weight increased the basal metabolic rate from 20 to 30 per cent in the first hour and that this level was maintained for twenty-four hours. None of his patients noticed unfavorable reactions with this dosage but they did lose weight. He also stated that single doses of between 5 and 10 mg. per kilogram caused copious perspiration and that 10 mg. per kilogram three times a day was too dangerous. Our patient experienced no loss of weight even with 8 mg. per kilogram of body weight until extremely unfavorable reactions, including neutropenia, had been produced.

SUMMARY

1. Agranulocytic angina developed in a patient after the ingestion of 21.8 Gm. of 2, 4 *di*nitrophenol sodium over a period of four months.

2. The dosage was 4 mg. per kilogram of body weight daily for two weeks and then doubled until the onset of unfavorable reactions.

3. Treatment consisted of discontinuing the drug, administration of pentnucleotide and one transfusion of 250 cc. of whole blood, following which the patient recovered.

UNDULANT FEVER MENINGITIS

REPORT OF CASE WITH RECOVERY

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AND
PAUL H. JORDAN, M.D.
HARTFORD, CONN.

The patient with proved undulant fever meningoencephalitis who formed the subject of a report by Sanders[1] in September 1931 died in the University Hospital at Iowa City, Nov. 3, 1931. The case has since been reported with postmortem observations by Hansmann and Schencken.[2] Incidentally, the case is the first reported proved occurrence of a meningeal infection in man with the porcine variety of Brucella melitensis. While proved infections of the human meninges by organisms of the Brucella group are rare, the recovery from such an infection is still more uncommon. The present case report should therefore be of especial interest, particularly from the standpoint of therapy.

REPORT OF CASE

Epidemiology.—About March 12, 1931, L. M., with four other men, was dehorning a herd of feeding cattle which had been recently received from various shipping centers. Nothing is known about abortions occurring before or since in that

3. Cutting, W. C.; Mehrtens, H. G., and Tainter, M. L.: Actions and Uses of Dinitrophenol, J. A. M. A. **101**: 193 (July 15) 1933.

From the Battle Creek Hospital, Battle Creek, Iowa.

1. Sanders, W. E.: Undulant Fever Meningitis: Organism in Spinal Fluid, J. Iowa M. Soc. **21**: 510 (Sept.) 1931.

2. Hansmann, G. H., and Schencken, J. R.: Melitensis Meningo-Encephalitis: Mycotic Aneurysm Due to Brucella Melitensis Var. Porcine, Am. J. Path. **8**: 435 (July) 1932.

stock. The other four men were not ill subsequently. About the same time, the patient alone skinned two ewe sheep which had died supposedly following injuries produced by dogs. There was an unusual amount of serum beneath the skin of the animals, and ecchymoses about the back were present. Another ewe aborted two lambs at that time but lived. In the fall of 1931, one brood sow on the place aborted her litter.

History.—L. M., a white American male farmer, aged 35, was brought to the Battle Creek (Iowa) Hospital, April 7, 1931, complaining of intermittent fever, daily chills, throbbing right parietal and temporal headache, rash over the hands and arms, stiffness of the ankles, and increased constipation during a period of nineteen days. The family history was irrelevant. The past history was also irrelevant except for the presence of a severe sore throat with slight hemoptysis at times, which began three weeks prior to and merged with the present illness. The patient had always been slightly costive.

March 19 the patient became suddenly ill with a severe shaking chill followed by fever and accompanied by a severe throbbing right parietal and temporal headache. An erythematous rash over the hands and arms together with some slight pain, swelling and stiffness in both ankles occurred within the first forty-eight hours. The temperature, March 22, was 103 F. orally. From the onset until the administration of the second dose of the toxic filtrate, April 23, there were daily chills preceded by fever and followed by profuse diaphoresis. The daily fever at first began in the afternoon, but later in the course it occurred in the morning with the daily duration of the hyperpyrexia tending to increase. The headache, always a prominent symptom, subsided somewhat prior to hospitalization but returned almost immediately afterward. The patient was confined to bed from the onset. He had always been somewhat costive but this condition became much more marked while he was ill, requiring daily laxatives or enemas. He lost much weight, although the exact amount is not known. Prior to hospitalization, a definite diagnosis had not been established.

Course in Hospital.—On admission to the hospital the patient's temperature was of 101 F. rectally. The only significant physical finding, aside from the erythematous rash over both upper extremities and the stiffness of the ankles, was a quite definite enlargement of the spleen. Until April 21, treatment was chiefly symptomatic and supportive together with the use of a total of three intramuscular injections of a nonspecific foreign protein, which resulted in essentially no improvement. For the first ten days of hospitalization the temperature ranged from normal or slightly above to 103 to 104 F. rectally the same day, the maximum elevation occurring at no regular period in the day. The patient's consciousness was somewhat clouded after the first three or four days of hospitalization, but on the night of April 16 (exactly four weeks from the onset of the illness) he was probably more noisy than usual, and the following morning he complained of a stiff neck. The usual physical and cerebrospinal fluid signs of a meningitis were present.

Special therapy with a toxic filtrate of a culture of certain members of the Brucella group was begun, April 21, two injections of 0.5 cc. each being given on that date, the first subcutaneously and succeeding ones intramuscularly. A third injection of 1 cc. was given two days later, with the result that for the first time the temperature was normal for an entire day and remained normal. The injections were followed by local induration and erythema, but no necrosis or abscess formation occurred. The other therapy consisted, aside from symptomatic and supportive measures, of repeated lumbar punctures, with the withdrawal of sufficient amounts of cerebrospinal fluid to bring the pressure to normal, as much as 60 cc. being obtained at times. Each withdrawal of fluid was followed by quite definite symptomatic relief. A total of eight such lumbar punctures were done from April 17 to April 24 inclusive, and following the administration of the toxic filtrate the spinal fluid cell count steadily decreased until it was normal (below 6 cells), April 24. However, the irrationality and disorientation continued, and on May 5 another intramuscular injection of 1 cc. of the toxic filtrate was given. Periods of rationality began on May 10 but a normal mental status was not obtained until eleven days later, and even then there was occasional involuntary micturition for several days. The patient was discharged from the hospital mentally normal, although much weakened physically, May 24. There had been no convulsions at any time.

Subsequent Course.—The patient was again seen on Nov. 14, 1931, and stated that for two months after hospitalization there was considerable swelling of the feet and ankles whenever he was up and about. June 6 he weighed 118 pounds (53.5 Kg.) and gained 18 pounds (8 Kg.) in the next three weeks. His weight, November 14, was 140 pounds (63.5 Kg.). There had been no chills, fever, headaches, joint pains, nervous manifestations or persistent constipation since his discharge. He did not do much work until September because of some residual fatigability but since then had been able to do the usual work about the farm except when hindered by a neuralgia in the interscapular area, which had been present intermittently for several years. Physical examination, November 14, was essentially negative and a blood specimen drawn at that time did not agglutinate Brucella melitensis.

Laboratory Examinations.—Dr. A. V. Hardy, Dr. I. H. Borts and Thelma Decapito, all of the Iowa State Hygienic Laboratories at Iowa City, performed the serologic and bacteriologic studies. Dr. Hardy suggested the use of the toxic filtrate of a culture of members of the Brucella group and furnished the material.

Serology: Blood drawn for multiple agglutination tests was reported, April 10, as being positive for Brucella melitensis in a dilution of 1:80, and the same results were obtained on another specimen nine days later. Blood drawn on May 21 gave negative agglutination reactions but had been delayed in transit. A blood specimen obtained November 14 (about six months after the discharge of the patient from the hospital) was also reported as showing negative agglutination reactions for Brucella melitensis and had been received in good condition. A specimen of cerebrospinal fluid received at the laboratory, May 23, was reported as not agglutinating Brucella melitensis in any dilution.

Bacteriology: Two guinea-pigs inoculated with fresh blood, April 24, proved to be negative on autopsy at the end of a month, while two other guinea-pigs inoculated with freshly drawn cerebrospinal fluid on the same day showed the usual changes in the liver, lymph nodes and spleen for a melitensis infection on autopsy, and cultures obtained from the tissues were reported on July 8 as growing the porcine variety of Brucella melitensis. A blood culture drawn on April 29 was also negative. The cerebrospinal fluid taken on two occasions during the acute stage of the meningitis was cultivated on ascitic fluid blood agar and chocolate agar and was reported as showing no growth after four days.

Cerebrospinal Fluid: The first specimen of cerebrospinal fluid, drawn on April 18, the day following the onset of the meningitis, was turbid and under increased pressure but a cell count was not made. A specimen obtained the following day contained 707 cells, with 343 polymorphonuclears and 364 mononuclears. April 20 the spinal fluid cell count was 2,280, with 1,800 polymorphonuclears and 480 mononuclears, and the fluid was distinctly purulent in character. Smears on both occasions were negative. April 24 the fluid was clear and under normal pressure, and the cell count was below 6 cells.

Blood and Urine: On admission to the hospital the white blood cell count was 9,000. A differential count was not made. Urinalysis was negative except for the presence of a trace to one plus albumin during the acute phase of the illness. The urine was not examined bacteriologically.

Summary.—In a case of proved human undulant fever meningitis, with recovery, the onset of the meningitis was acute and was preceded for four weeks by symptoms that could have been due to a low grade encephalitis. The blood serum obtained one week before the onset of the actual meningitis agglutinated Brucella melitensis in a dilution of 1:80. The cerebrospinal fluid presented a relatively high cell count with a large percentage of mononuclear cells, although the percentage of mononuclear cells tended to decrease later in the course. Repeated lumbar punctures seemed to produce distinct symptomatic improvement. A toxic filtrate of a culture of organisms of the Brucella group, injected repeatedly intramuscularly and subcutaneously relatively early in the course of

the meningitis, was followed by definite clinical improvement and recovery. The porcine variety of Brucella melitensis was obtained from the cerebrospinal fluid on guinea-pig inoculation but was not obtained on direct culture.

COMMENT

Certain interesting comparisons can be drawn between the case reported by Sanders and by Hansmann and Schencken and this one. In both instances the actual onset of the meningitis was preceded by symptoms that could possibly have been due to a low grade encephalitis. In the first case they existed probably for nine months, and in this one less than a month. In the former case the changes seen at necropsy would lead one to believe that invasion of the meninges took place by way of the blood stream. In view of the daily chills, rash and other associated symptoms in this case, a preceding bacteremia would be strongly suspected, although not proved by blood culture or guinea-pig inoculation. In both instances the actual onset of the meningitis was acute. In both instances the initial cerebrospinal fluid cell counts were relatively high, and there were more mononuclear cells than one would expect with a meningitis due to the meningococcus or one of the pyogenic organisms. In the former case, immunologic agents derived from the Brucella group were used rather late (over three months) in the course of the illness and the results were not so gratifying, while in this case the medication was used relatively early. In both cases, lumbar puncture produced symptomatic relief. The causative organism was isolated from the cerebrospinal fluid in both instances by guinea-pig inoculation and was of the porcine variety.

CONCLUSIONS

Although meager, present knowledge of undulant fever meningitis would seem to justify the drawing of certain conclusions, which may be of future value to the clinician:

1. A meningitis occurring in the course of proved or suspected undulant fever, and showing a relatively high cerebrospinal fluid cell count with originally a large proportion of mononuclear cells, should probably be considered — in regard to therapeusis — to be due to an infection by some organism of the Brucella group.

2. The parenteral administration of a toxic filtrate of cultures of various members of the Brucella group of organisms, repeated at relatively brief intervals (twenty-four hours or less), seemed to be responsible for the clinical improvement that was obtained after the third injection, and the recovery that followed the fourth treatment.

3. Repeated, frequent and copious drainage of the cerebrospinal fluid seems to be an important part in the treatment of the condition.

4. The fact that, following recovery, the blood serum fails to agglutinate the Brucella group of organisms does not disprove the previous presence of a meningitis due to some member of that group.

5. It would seem that the causative organism in an undulant fever meningitis is most surely isolated through the inoculation of freshly drawn cerebrospinal fluid into guinea-pigs, with appropriate cultures of the involved tissues when the animals have developed the pathologic manifestations of the disease in the lymph nodes, liver and spleen.

6. An undulant fever meningitis is a relatively rare but serious complication of undulant fever, although not necessarily fatal.

Clinical Notes, Suggestions and New Instruments

CAN SENSITIVITY TO DINITROPHENOL BE DETERMINED BY SKIN TESTS?

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The study here reported was undertaken to determine whether it is possible by the use of the available methods of skin testing to anticipate the skin eruptions and other signs of hypersensitiveness that not infrequently occur with the therapeutic use of dinitrophenol. Without consideration of the controversial subjects of allergy, atopy or anaphylaxis and without referring to the none too clear conceptions of antigen antibody reactions as applied to nonprotein substances, I wish to submit the results of my experiment.

METHODS

The three possible methods of skin testing were employed for the direct test, and the intradermal method alone was used for the indirect test.

1. *The Patch Test.*—Ten milligrams of sodium dinitrophenol powder[1] was placed on the flexor surface of the forearm or of the back and covered with waxed paper, held in position with a wide strip of adhesive plaster. Readings of the reactions were recorded at intervals of twenty-four, forty-eight, seventy-two and ninety-six hours.

2. *The Scratch Test.*—Two milligrams of sodium dinitrophenol with salt solution or 2 drops of a 2 per cent aqueous solution of sodium dinitrophenol was rubbed in a scarification one-quarter inch in length made in the skin of the forearm or back. Readings of the reactions were recorded after intervals of five minutes, fifteen minutes and twenty-four hours.

3. *The Intradermal Test.*—From 0.02 to 0.01 cc. of an aqueous solution of sodium dinitrophenol in dilutions of 1 per cent, 0.1 per cent, 0.01 per cent and 0.001 per cent were introduced intradermally in the upper arm. Readings of reactions were recorded after periods of five minutes, fifteen minutes and twenty-four hours.

4. *The Indirect or Passive Transfer Test.*—This was carried out by the method of Prausnitz-Küstner. Blood serum from a patient with a violent clinical reaction to dinitrophenol was introduced intradermally in nonallergic individuals. Twenty-four hours later, the sites of passive transfer were tested intradermally with sodium dinitrophenol. Readings of the reactions were recorded after intervals of five minutes, fifteen minutes and twenty-four hours.

RESULTS

The tests were made on 157 persons, of whom 117 were patients with hay fever, asthma or urticaria, and forty had no allergic complaints. The ages varied from 6 to 63 years, and there were 103 males and 54 females.

The three direct tests on each one of these 157 allergic and nonallergic individuals were entirely negative and hence gave no indication of skin sensitiveness to the drug.

Another patient suffered a severe skin reaction during a period of self medication with dinitrophenol. She was not tested directly for skin sensitivity at the time because there was no normal skin available. Therefore, the indirect test of passive transfer was applied. Her blood serum was injected into the skin of three normal individuals. Later these injected areas were tested directly by the intradermal method. There were no positive reactions in any of the three individuals, and hence the results were entirely negative.

Twelve individuals were given therapeutic doses of sodium dinitrophenol by mouth. Four of the number were allergic, as shown by the presence of hay fever, asthma or urticaria. In three of the twelve, including one of the four allergic individuals, a definite urticarial eruption developed during which the drug was temporarily discontinued. These three individuals were given the drug again in the same or even larger doses and as yet have had no further difficulty.

1. The sodium dinitrophenol used in these experiments was kindly furnished by Dr. M. L. Tainter.

The skin tests in these reacting individuals were entirely negative. Certainly, if the skin eruptions were truly allergic, repeated contacts and reexposures should lead to increasingly severe reactions. This does not seem to be the case.

Recently a single instance was reported of a passive transfer test with dinitrophenol giving positive results.[2] This is not in accord with my experiences.

CONCLUSIONS

1. Entirely negative results were obtained in tests for skin sensitivity to sodium dinitrophenol by means of the patch, scratch and intradermal methods in 157 individuals.

2. Three of these patients later showed a skin reaction to the therapeutic use of dinitrophenol.

3. In a patient who showed a severe skin reaction to dinitrophenol, passive transfer of sensitivity could not be demonstrated.

4. These results indicate that skin tests will be of no value in predicting skin sensitivity to dinitrophenol.

DINITROPHENOL POISONING CAUSING JAUNDICE: REPORT OF CASE

NATHAN SIDEL, M.D., BOSTON

Within the past year, dinitrophenol has been used extensively as a means of reducing weight. However, its possible harmful effects have not been realized sufficiently until very recently. In papers by Anderson, Reed and Emerson,[1] Geiger,[2] Poole and Haining,[3] and Tainter and Wood,[4] fatal results from the use of dinitrophenol have been reported. In all probability, a great many more poisonings and fatalities have occurred, since many druggists are dispensing dinitrophenol without a physician's prescription, under both the name of dinitrophenol and various proprietary names. A case of toxic hepatitis with intense jaundice following the use of dinitrophenol is here reported.

REPORT OF CASE

B. R., a white woman, unmarried, aged 26, had used various reducing diets because she weighed too much for her stature (58 inches, 145 cm.). The past history and family history were essentially negative. The patient began taking dinitrophenol, Feb. 18, 1934, under a physician's direction. The exact dosage could not be determined, but it was probably 1½ grains (100 mg.) four times a day. After a period of fourteen days she began to feel tired and had slight cramplike pains in the epigastrium. The drug was stopped at this time; the patient had lost 10 pounds (4.5 Kg.) in the two weeks. The following morning, March 7, there was severe urticaria and pruritus involving the legs and feet. The patient states that the itching was "terrific" and the urticaria appeared in the form of "large welts." Within the next twenty-four hours the entire body was involved, and the condition lasted four days. March 12, the day following the disappearance of the urticaria, a definite yellow tinge of the sclerae was observed by friends, and definite jaundice developed within the next few days. The stools were clay colored and the urine was dark brown; also, there was marked anorexia and the patient was very listless.

I saw the patient, March 20. She was poorly developed but well nourished, with marked jaundice, but there was no distress. The temperature was 98 F. and the pulse rate was 84. The upper part of the abdomen was somewhat prominent and a definitely tender, smooth liver edge was palpable about 5 cm. below the right costal margin. The upper border of liver dulness was in the right fourth interspace. The spleen was not palpable and there was no skin eruption. A diagnosis of toxic hepatitis caused by dinitrophenol was made.

Several urine examinations were negative for sugar but showed varying amounts of albumin, a specific gravity of from 1.004 to 1.014 and many pus cells but no casts or red blood cells. The test for bile in the urine was strongly positive. The stool was clay colored until April 4, at which time pigment was present. The blood showed: hemoglobin, 80 per cent (Sahli); red blood corpuscles, 5,250,000; white blood corpuscles, from 14,400 to 6,600. The blood smear was normal. The blood chemistry showed: blood sugar, 95 mg.; nonprotein nitrogen, 27 mg., and cholesterol, 168 mg. The icteric index at the height of jaundice was between 100 and 80 and the van den Bergh reaction was between 10.8 and 9.0. With bed rest for one month and a diet high in carbohydrate and low in fat supplemented by 10 units of insulin before meals and sodium phosphate each morning the strength and appetite of the patient gradually improved. There has been a gradual reduction in the jaundice, although she still presents some icterus after nine weeks. The liver has decreased in size so that it is barely palpable; the tenderness of the liver edge has practically disappeared.

SUMMARY

A woman, aged 26, took approximately 360 mg. of dinitrophenol daily for two weeks. Urticaria with pruritus developed and subsequently intense jaundice, an enlarged tender liver and clay-colored stools. Gradual improvement is taking place, although she has been jaundized nine weeks to date.

483 Beacon Street.

2. Frumess, G. M.: Allergic Reaction to Dinitrophenol, J. A. M. A. **102**: 1219 (April 14) 1934.

1. Anderson, H. H.; Reed, A. C., and Emerson, G. A.: Toxicity of Alpha-Dinitrophenol: Report of Case, J. A. M. A. **101**: 1053-1055 (Sept. 30) 1933.

2. Geiger, J. C.: A Death from Alpha-Dinitrophenol Poisoning, J. A. M. A. **101**: 1333 (Oct. 21) 1933.

3. Poole, F. E., and Haining, R. B.: Death from Dinitrophenol, J. A. M. A. **102**: 1141 (April 7) 1934.

4. Tainter, M. L., and Wood, D. A.: Fatal Dinitrophenol Poisoning, J. A. M. A. **102**: 1147 (April 7) 1934.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
H. A. CARTER, Secretary.

SOURCES OF ULTRAVIOLET AND INFRARED RADIATION USED IN THERAPY

PHYSICAL CHARACTERISTICS

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WASHINGTON, D. C.

(Concluded from page 188)

8. *The Quartz Mercury Arc.*—The radiation from the quartz mercury arc lamp is emitted principally in a series of intense spectral lines (charts 2 and 6) superposed on a faint continuous spectrum that contributes but little to the total ultraviolet emanating from the arc.

Recently a number of new types of mercury arc lamps have been put on the market. They serve two purposes: (1) those emitting a high ultraviolet intensity, for therapeutic purposes, and (2) the so-called sunlamps, usually emitting a low ultraviolet intensity, requiring long exposures, sold to the public for home use without the supervision of an experienced physician.

The Hot Quartz Lamp: The earliest and best known type of quartz mercury arc lamp (the so-called hot quartz lamp) operates at a high vapor pressure and a relatively high temperature. The current through the lamp is fairly large (from 3 to 4 amperes) and the voltage on the burner is low (from 65 to 70 volts).

Investigations[6] of quartz mercury arc lamps having (1) a solid tungsten anode and (2) a liquid mercury anode show that there is no appreciable difference in the ultraviolet component radiation emitted by these two types of lamps when operated on the same energy input in the burner. Air-cooled burners operated on alternating current (through the burner) and water-

6. Coblentz, Long and Kahler: Bur. Stds. Sc. Papers **15**: 1, 1918 (No. 330, 5 cents). Coblentz and Kahler: Bur. Stds. Sc. Papers **16**: 233, 1920 (No. 378, 5 cents).

cooled burners operated on direct current appear to have a somewhat higher ultraviolet radiation component than air-cooled, direct-current burners, owing to the lower temperature of the lamp.

Aside from several strong emission lines in the region of 10,000 to 12,000 angstroms, the quartz mercury arc emits but little infra-red radiation.[7] The infra-red rays that are emitted emanate principally from the incandescent tungsten anode and especially (in both types of lamps) from the quartz enclosure and the hood, which emit low temperature, long wavelength, nonpenetrating radiation.

Physically there is no comparison between this type of radiation and that of the sun (chart 7), and it is hardly to be expected that these two sources will give the same results in all types of light treatment, and in dye fading.

In chart 7 is given the spectral energy distribution (unshaded vertical lines) of a 110-volt vertical Uviarc lamp operated on 65 volts, and about 4 amperes in the burner. Owing to the high current density, the temperature and the pressure are relatively high, and the resonance emission line at 2,537 angstroms is practically of the same intensity as the lines at 3,020 and 3,130 angstroms, in contrast with the so-called cold quartz vapor glow lamp (chart 7), in which the line at 2,537 angstroms contains over 95 per cent of the radiation emitted by these three lines.

The Mazda Sunlight Lamps: A recent production (The Mazda S-1 and the Mazda S-2 "sunlight" lamps) is a combination of an incandescent tungsten filament and an arc in mercury vapor between highly incandescent electrodes of tungsten. This is accomplished by operating a V-shaped helical tungsten filament in parallel with the mercury arc, but it is at a considerably lower temperature than the incandescent tungsten electrodes forming the arc at the top of the V-shaped filament. The surrounding globe, of special glass, absorbs the rays of wavelengths shorter than 2,800 angstroms which are not present in sunlight. The mercury arc supplements the ultraviolet radiation, which is only feebly emitted by the incandescent tungsten electrodes, at from 2,800 to 3,650 angstroms.

The result of this combination of incandescent solid and arc-vapor radiation is an unusual emission spectrum, consisting of a series of strong ultraviolet emission lines of mercury vapor (at 2,800, 2,967, 3,020, 3,130, 3,340, 3,650 and 4,050 angstroms, chart 6), superposed on a continuous spectrum radiation from the incandescent solid, which increases rapidly in intensity (beginning to be perceptible at about 3,650 angstroms) and extends throughout the visible and into the deep infra-red (chart 1).

The "Cold Quartz" Lamp: The so-called cold quartz ultraviolet lamp is essentially a low vapor pressure, low amperage (0.015 ampere), high potential (5,000 volts, open circuit), glow discharge, similar to the well known Geissler tube. The power consumed is small and consequently there is no great rise in temperature of the burner.

The spectral energy distribution of this type of ultraviolet lamp is illustrated in chart 7. Of the total radiation of all wavelengths less than and including the line at 3,130 angstroms, more than 95 per cent is contained in the resonance emission line of mercury vapor at 2,537 angstroms. Two models of this type of lamp were examined—a small grid hand lamp in an aluminum reflector and a large hexagonal grid lamp in a large aluminum reflector, supported on a stand for body irradiation.

The erythemogenic efficiency of this type of lamp is high, but, as shown in chart 7, practically all the erythemal effect is produced by the line at 2,537 angstroms. For this reason the question has arisen whether this type of ultraviolet radiation should be used for general body irradiation or whether its application should be confined to special conditions. The fact that the erythemogenic efficiency of a source is high is not necessarily a criterion of its suitability for therapeutic purposes.

The Type G Mercury Glow Lamp: By providing suitable ionization by means of electrons emitted from a hot cathode, only a relatively low voltage is required

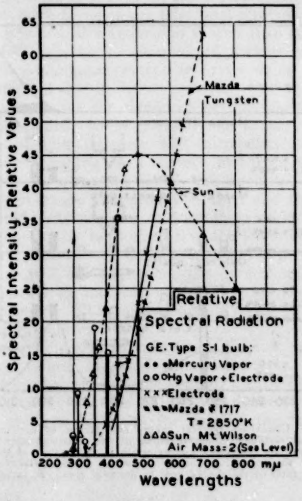


Chart 6.—Relative spectral radiation.

to excite resonance radiation in the glow discharge through mercury vapor. A typical example of this type of radiation is the new ultraviolet glow lamp in a bulb of special glass that absorbs almost completely all the ultraviolet rays of wavelengths shorter than about 2,800 angstroms. The operating temperature of this type of lamp is low, and the glow discharge practically fills the glass bulb.

The spectral energy distribution of this type of mercury vapor radiation is somewhat similar to that of the Mazda S-1 lamp in a corex glass bulb, illustrated in chart 7. The total ultraviolet emitted being rather low, this type of lamp belongs to the category of "sunlamps" marketed by a number of producers under a variety of trade names.

The High Frequency Electrodes Discharge: The most recent production in ultraviolet therapeutic lamps is the electrodeless discharge, through mercury vapor, in a quartz bulb. The lamps examined were spherical

7. Coblentz, W. W.: Bur. Stds. Sc. Bull. **9**: 96, 1912 (No. 191, 10 cents).

bulbs of quartz, or Corex-D, glass (without electrodes), which are placed within a helical conductor that carries the high frequency current, obtained from the transformer of a diathermy machine. The bulb is evacuated and contains a globule of mercury, the vapor of which is excited to luminescence by means of the high frequency discharge, from the 5,000 volt secondary of the transformer, passing through the helix surrounding the bulb. It is well known that the emission spectrum of the electrodeless discharge is essentially that of the neutral mercury atom, similar to that of the ordinary mercury arc; though close to the walls of the bulb there are some weak spark lines, not present in the hot quartz mercury arc lamp.

The spectral energy distribution, the total ultraviolet output, and the erythemogenic efficiency of this type of lamp were found to be closely the same as that of the ordinary mercury arc lamp (Uviarc) depicted in chart 7. Practically the only difference is the intrinsic

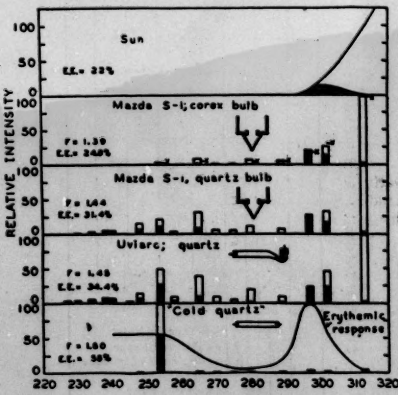


Chart 7.—Ultraviolet spectral energy distribution of various sources; also spectral erythemic response curve of the untanned skin and (the shaded areas) the rubescence energy which is the product of the spectral energy and the spectral erythemic response. E. E. erythemogenic efficiency; the ratio of the shaded area to the total area. F, factor F.

brightness (flux density), which, in the ordinary quartz mercury arc, is concentrated in a luminous column less than 10 mm. in diameter, whereas in the electrodeless discharge the radiation fills the entire bulb, some 6 to 8 cm. in diameter.

9. *The Cold Red Light.*—But few sources of radiation remain unexploited for therapeutic purposes. A recent European production is the so-called cold red light emitted by the neon glow discharge tube, familiar to all in the form of the sign-lighting tubes in show windows and street signs. The intensity of the total radiation emitted by the neon glow lamp is low. It consists of a narrow band of wavelengths in the orange-red part of the spectrum, with a maximum in the region of 6,500 angstroms, and a weaker maximum at about 8,500 angstroms. Neon emits practically no radiation of wavelengths longer than about 10,000 angstroms.[8] If the deep-penetrating rays in the red and near infra-red have a specific therapeutic action, it would be more efficient to use a more intense source of these rays. For example, a powerful source of red and near infra-red rays is a 500 watt gas-filled tungsten filament lamp described on a preceding page. If the narrow band of red and near infra-red rays has a specific therapeutic action only when used separately from the rest of the spectrum of the tungsten lamp, it can be isolated by placing in front of the lamp a filter consisting of a sheet of red glass to shut out the shorter wavelengths, and a cell of water or a sheet of Corning heat-absorbing glass to intercept the infra-red rays of wavelengths longer than about 10,000 angstroms. The maximum of the filtered radiation will be in the spectral region of about 7,000 to 8,000 angstroms, with an intensity that far exceeds the ordinary neon glow lamp. From the clinical tests made by Cramer and Fechner[9] with a neon glow lamp, made for therapeutic purposes, it appears that the cold red ray lamp has little, if any, specific stimulating effect on the human body.

BIOLOGIC EFFECTS

This survey of the ever increasing number of types of lamps sold for therapeutic purposes, some of which are so weak in ultraviolet radiation that an exposure of from ten to thirty hours would be required to produce a minimum perceptible erythema, seems incomplete without some reference to their use.

During the past few years, experimental data have become available which show that the spectral band of ultraviolet radiation of wavelengths shorter than about 3,150 angstroms, occurring in sunlight and in some artificial sources of radiation, if sufficiently prolonged, has the power of preventing and of curing rickets. This is the underlying basis for exploiting ultraviolet of these wavelengths for general healing purposes. While this point of view may be too broad, the beneficial effects of short wavelength ultraviolet radiation in surgical tuberculosis and certain skin diseases are recognized.

An important and unanswered question is the minimum ultraviolet radiant flux (radiant power) that the source must emit in order to insure effective therapeutic action. Manifestly, the amount of ultraviolet radiation that can be applied to the body without producing a burn depends on the tolerance of the skin. This can be measured by the erythema produced. It is common knowledge that the erythemal sensibility of the untanned skin is widely different for different persons and also widely different for the same person, depending on the amount of moisture on the skin. Hence, the erythemic response is in common use as an indicator of skin tolerance and of the amount of ultraviolet radiation that can be applied at any one time. Furthermore, in view of the wide variation in ultraviolet output of different kinds of lamps, and the wide variation in skin tolerance (twice as sensitive in summer as in winter), the safe procedure is to test the erythemal reaction on a small area of each person before attempting to make exposures over large areas of the body.

Since most of these sources emit a wide band of ultraviolet radiation in the spectral region that produces an erythema (shown in the lower part of chart 7), the purpose of the erythema test is to avoid burns. The erythema test is not necessarily a measure of the thera-

8. Coblentz, W. W.: Bull. Bur. Stds. 9: 81-116, 1912 (No. 191, 10 cents).

9. Cramer, H., and Fechner, G.: Strahlentherapie 39: 474, 1931.

peutic action of the lamp, although, in the case of rickets, the spectral bands of erythemal and therapeutic action appear to overlap. However, if a source should be obtained having a strong emission at from 2,700 to 2,900 angstroms with little or no radiation at 2,500 and 2,967 angstroms (lower part of chart 7), a far stronger dosage than with lamps now in use could be applied, without producing a burn.

In view of these considerations [10] the Council on Physical Therapy of the American Medical Association has adopted [11] and, until a more practical procedure is proposed, will use the erythemal reaction as a basis for judging the effectiveness of ultraviolet lamps for two important reasons: (1) In the case of exposure to intense sources of ultraviolet radiation it is a simple and practical means of preventing severe burns, and (2) in the case of weak sources of ultraviolet radiation it is an efficient safeguard against possible fraudulent sale of lamps that are deficient in ultraviolet radiation.

The Council's specifications of minimum intensity are based on a comfortable and convenient operating distance (24 inches, or 61 cm.) from the front edge of the reflector, at which distance the exposure can be made without burning the skin by coming in contact with the burner or by the infra-red rays. The ultraviolet intensity of the lamp shall be such that the time of exposure to produce a minimum perceptible erythema (one that disappears in less than twenty-four hours) will not be longer than fifteen minutes for a therapeutic lamp and sixty minutes for so-called sunlamps.

TABLE 2.—*Erythemogenic Equivalents of Ultraviolet Radiation Required to Produce Erythema*

Source	Ultraviolet Intensity in Microwatts per Square Centimeter
Sun: midday, midsummer, midlatitude, sea level	91
Carbon arc: blue flame, cored carbon, in reflector, no window	48
Carbon arc: glass window, opaque to 3,000 angstroms and shorter (estimated)	90
Mercury arc: General Electric Mazda, type S-1 lamp; high temperature arc in parallel with V-shaped tungsten filament	83
Mercury arc: General Electric Mazda, type S-2 lamp; similar to the S-1 lamp, but smaller; both in glass bulbs	93
Mercury arc: types G-1 and G-5; low temperature, low voltage thermionic glow discharge; glass bulb	108
Mercury arc: high temperature, high vapor pressure, low voltage; quartz tube	58
Mercury arc: high frequency electrodeless discharge; quartz bulb	60
Mercury arc: low temperature, low vapor pressure, high voltage, "cold quartz," Geissler tube discharge	36

As shown in chart 7, the emission line of the mercury arc lamp at 2,967 angstroms (297 mμ in the illustration) has an erythemogenic efficiency of 100 per cent relative to the rest of the spectral erythemic response. No other wavelength or group of wavelengths has such a high efficiency in generating an erythema. Hence the emission line of homogeneous radiation at 2,967 angstroms is a natural standard for evaluating sources of heterogeneous ultraviolet radiation.

The intensity and the erythemogenic action of the emission line of mercury at 2,967 angstroms is easily evaluated in absolute units; and the erythemal action, as well as the radiometric output, of the heterogeneous ultraviolet radiation from various sources is readily correlated with this emission line as a standard.[12]

From our experiments [12] it appears that a fifteen-minute exposure to a flux density of 20 microwatts per square centimeter (or a total of 180,000 ergs) of homogeneous radiation of wavelength 2,967 angstroms does not produce an erythema on the average untanned skin, though it may be somewhat too intense for a blond skin.

The Council has therefore adopted 20 microwatts per square centimeter of homogeneous radiation of wavelength 2,967 angstroms as the erythemal unit (E. U.) of dosage; that is, 1 E. U. = 20 microwatts per square centimeter of radiation of wavelength 2,967 angstroms. For a further discussion of this subject the reader is referred to the original papers.[12]

With 20 microwatts per square centimeter for homogeneous radiation of wavelength 2,967 angstroms as a standard, in table 2 is given the erythemogenic equivalents of the heterogeneous (the total integrated) ultraviolet radiation of wavelengths shorter than and including 3,130 angstroms, required of various sources to produce a minimum perceptible erythema on the average untanned skin in fifteen minutes. For an exposure of sixty minutes the minimum permissible values are only one-fourth as large. That is to say, the total energy of unit intensity (20 microwatts per square centimeter) falling on a surface in fifteen minutes is the same as when one-fourth the intensity (5 microwatts per square centimeter) is used and the surface irradiated sixty minutes, or four times as long. From this table it may be noticed that the lower the erythemogenic efficiency of the source, relative to the standard line at 2,967 angstroms, the greater must be the total ultraviolet intensity of wavelengths shorter than and including 3,130 angstroms in order to meet the Council's requirements.

The specification of intensities given in table 2 are average values, observed in a 0-5 degree zone subtended by the center as the source; i. e., within a circle approximately 4 inches (10 cm.) in diameter, lying in a plane at right angles to the axis of the reflector, at the specified operating distance (24 inches, 61 cm.), from the front edge of the reflector; it constitutes the minimum values accepted by the Council on Physical Therapy.

CONCLUSIONS

It may be stated that in general the lamps submitted to the Council have an intensity that is several times the minimum requirements tabulated. The operating distance and the time of exposure to a given type of lamp are specified by the manufacturer.

In the newer lamps, such as the G-type glow lamp, the first productions did not comply with the specifications, but these lamps were promptly improved to meet competition with other types.

In general, the specifications by the Council have tended to improve the output of responsible lamp manufacturers, but at present there seems to be no means to prevent the exploitation of the public by the sale of cheap lamps emitting little or no ultraviolet radiation.

2737 Macomb, N.W.

10. Coblentz, W. W.: Ultraviolet Radiation Useful for Therapeutic Purposes, J. A. M. A. **98**: 1082 (March 26) 1932; **99**: 125 (July 9) 1932.

11: Acceptance of Sunlamps, J. A. M. A. **102**: 1862 (June 10) 1933.

12. Coblentz, W. W.; Stair, R., and Hogue, J. M.: Tests of a Balanced Thermocouple and Filter Radiometer as a Standard Ultraviolet Dosage Intensity Meter, Bur. Stds., J. Research **8**: 759, 1932 (R. P. No. 450, 10 cents).

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

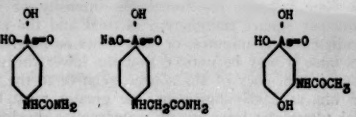
PAUL NICHOLAS LEECH, Secretary.

CARBARSONE

Carbarsone is a product of Eli Lilly and Company, originally proposed by Leake and his collaborators as a therapeutic agent in intestinal amebiasis. It was considered by the Council in 1931 and a preliminary report was published a short time later.[1] In view of subsequent publications on the use of this therapeutic agent and a report from the A. M. A. Chemical Laboratory that the product is satisfactory chemically, the Council has now accepted Carbarsone-Lilly for inclusion in N. N. R. and has authorized publication of the following report:

Carbarsone is designated chemically as *p*-carbamidophenylarsonic acid. It is closely related to tryparsamide; in common with both acetarsone and tryparsamide, it is a pentavalent arsenic compound.

An investigation carried out at San Quentin prison by Reed and his associates on the incidence of amebiasis in newly admitted prisoners and in the food-handling force of the institution, and the treatment of these cases with vioform or carbarsone, has been the subject of a series of progress reports. The final report[2] covers ninety-two treated cases, of which twenty-nine were removed elsewhere before any significant follow-up period could be established. Of the remaining sixty-three, thirty-one had been treated with vioform and thirty-two with carbarsone.



Carbarsone. Tryparsamide. Acetarsone.

Stool examinations (smears stained with iron-hematoxylin) were made on three consecutive days at intervals of from two to four weeks on each patient. The vioform group was followed for an average period of 13.2 months (range, 7 to 18½ months); all but three of these patients remained negative (the latter were found to be positive at eight, ten and sixteen months, respectively). Of the carbarsone group, all thirty-two remained negative for an average period of 19.6 months (range, 13½ to 22 months). Of the original series of forty-two cases treated with carbarsone, one severe case did not remain negative after two courses. Of four others in which 5 Gm. of carbarsone was given in ten days, two showed recurrences six and seven weeks, respectively, after treatment. After a second course of carbarsone, these two remained negative for the one month of observation. All four patients were paroled before the follow-up period could be completed.

It appears from this unusually well controlled study, in which the possibility of reinfection was apparently relatively low, that carbarsone may be an unusually effective treatment in amebiasis.

Presson[3] presents results in forty cases of protozoiasis treated with carbarsone (eighteen Endamoeba histolytica alone, five Endamoeba histolytica associated with other protozoans; the remainder were Endamoeba coli, Endamoeba nana, Trichomonas, Giardia, Chilomastix, singly or mixed). One course of 0.25 Gm. of carbarsone twice a day for ten days cleared all but two cases (one Giardia, the other Endamoeba histolytica, Chilomastix and Trichomonas mixed); from six to fifty follow-up examinations were made in each case but the periods of observation are not stated. The only side effects reported by Presson were flatulence and "hyperperistalsis" of the intestine but "no excessive diarrhea."

Anderson and Reed[4] state that about 10 per cent of patients with amebiasis are found to be refractory to carbarsone orally. These are cases usually of acute dysentery or diarrhea in which motile amebas are found. The authors present twelve cases in which carbarsone was administered rectally (200 cc. of a solution containing 1 per cent of carbarsone and 2 per cent of sodium bicarbonate) as an overnight retention enema, on alternate days for five such treatments. Usually a sedative was administered to permit retention of the enema; three patients could not retain the dose. Oral treatment was interrupted to avoid overdosage. The enemas relieved the acute symptoms but the amebas were not eradicated. Eight of these patients received carbarsone by mouth subsequently; four had one course, two two courses, and two three courses. In addition, adjuvants such as bismuth subcarbonate, vioform, acriflavine, heptylresorcinol and emetine were used variously in seven patients. The latter, and five patients receiving carbarsone alone, remained ameba free for an average period of five and one-fourth months; but two of the first group were found positive again at six and twelve months, respectively. These authors believe that patients should be followed for a period of two years after completion of therapy. Of course, in a period as long as this, as has been pointed out, it is impossible to distinguish recurrence from reinfection.

Anderson[5] reports eighty-eight cases of amebiasis in Panama treated with carbarsone. Eighty adults received a total of 5 Gm. in ten days; six children received about one-half the adult dose; two patients did not complete treatment. Thirty-seven of these cases were followed for a month (six or more specimens) and all but one were cleared and remained so for the period of observation. The data on the others are incomplete.

Chopra, Sen and Sen[6] investigated the effectiveness of carbarsone in thirty-one cases of amebiasis treated in Calcutta. Twenty-three had five or more (most had six) negative examinations on different days following cessation of treatment; four patients appeared to be cleared but the authors consider the number of post-treatment examinations insufficient. There were four failures. It is obvious that, as the authors admit, the criterion of cure used by them is not adequate for reasonable certainty of an ultimately satisfactory result. Nevertheless, the results obtained, as judged by this method, appear to be better than those obtained in India with the other agents commonly used. Chopra and his associates agree with the oft-repeated claim of the California workers that carbarsone is superior in therapeutic efficacy to acetarsone.

Anderson and Reed,[7] report one case of toxicity from carbarsone. This consisted of icterus, pain in the right upper quadrant, enlarged tender liver, numbness of the hands and legs, weakness and "generalized aches" in a patient who one year previously had had an enlarged tender liver following carbarsone therapy. The symptoms cleared in five days with no apparent residual effects. In addition, seven cases of gastric irritation occurred with a preparation purified by a different method, since abandoned.

Anderson and Reed[7] state that they have seen no evidence of skin, optic nerve or renal damage following the use of carbarsone clinically. The possibility of optic nerve destruction has been particularly emphasized, as carbarsone contains a modified amino group in para position to the arsenic atom, similar to the arrangement in tryparsamide. Fearrington (reported by Anderson and Reed[7]) administered graded doses up to totals of 150, 300, 600, 800 and 1,200 mg. per kilogram over a period of forty-eight weeks (alternating four weeks of administration with four weeks of rest) without evidence of toxicity in thirty-three cases as determined by clinical examina-

1. Preliminary report of the Council, J. A. M. A. **98**: 230 (Jan. 16) 1932.

2. Reed, A. C., and Johnstone, H. G.: Amebiasis Among One Thousand Prisoners: Final Report, Am. J. Trop. Med. **14**: 181 (March) 1934.

3. Presson, V. G.: Treatment of protozoiasis with carbarsone, to be published.

4. Anderson, H. H., and Reed, A. C.: Carbarsone Rectally in Amebiasis, Am. J. Trop. Med. **14**: 257 (May) 1934.

5. Anderson, H. H.: Amebiasis in Panama and California, with Special Reference to Incidence and Treatment, Am. J. Trop Med. **12**: 459 (Nov.) 1932.

6. Chopra, R. N.; Sen, B., and Sen, S.: Treatment of Chronic Intestinal Amebiasis with Carbarsone, Indian M. Gaz. **68**: 315 (June) 1933.

7. Anderson, H. H., and Reed, A. C.: Untoward Effects of Antiamebic Drugs, Am. J. Trop. Med. **14**: 269 (May) 1934.

tions (including visual field determinations) and tests on blood and urine, all at intervals of four weeks.

In one case reported to the Council, 0.25 Gm. was given twice a day for six days. On the fourth day severe headache developed, which persisted in milder form for the two subsequent days, on the fifth generalized itching occurred and on the sixth a light scaling erythematous rash was noted on the forearms. Administration was stopped and symptoms of toxicity cleared up largely within forty-eight hours.

Dr. Frank Smithies, in a discussion before the Chicago Society of Internal Medicine, May 28, 1934, and in a subsequent written communication, reported several cases of severe toxic reactions from the administration of carbarsone in 0.25 Gm. causules:

"1. One patient with acute amebiasis took less than ten capsules of carbarsone and within a week had a dermatitis of the exfoliative type over the hands and arms.

"2. One patient took twenty capsules of carbarsone (three capsules daily) and experienced, after the fifth day, pulmonary edema, edema of the larynx, chemical sore throat and very pronounced sneezing, lacrimation and running of the nose.

"3. One patient took carbarsone five days on and one week off (two capsules a day) and six weeks after treatment was begun came to me with a history of acutely swollen ankles, knees and wrists—a condition which the patient had never experienced before and which came on about the fourth week following the beginning of carbarsone therapy. When I saw him he had, in addition to moderate swelling about the soft parts of the joints named, a liver four fingerbreadths below the rib margin (it was tender) and a spleen at least twice the normal size (it was readily palpable).

"4. One patient, who took seven capsules of carbarsone over a period of three and one-half days, developed faulty vision and photophobia. There was moderate swelling of the eyelids, slight puffiness of the face and granular casts with a trace of albumin in the urine. Ophthalmoscopic examination showed moderate papillitis and moderate retinal edema.

"5. Several patients experienced aggravation of diarrhea, nausea and vomiting and vague pains, in the stomach region, after from two to eight carbarsone capsules had been taken. One of these patients developed slight but definite icterus on the fourth day after beginning carbarsone therapy (two capsules a day)."

Dr. Smithies[8] deprecates the present tendency toward the indiscriminate administration of fixed total doses of antiamebic drugs without regard to the sensitivity of the individual patient (or to the tissue damage that such remedies may produce) and often even without adequate diagnosis. He points out that adequate therapy often requires the use of a number of remedial agents and cautions against placing too much reliance on single "specific" remedies.

Reed[9] emphasizes the necessity of determining by suitable tests the presence or absence of hepatitis (and impairment of renal function), guarding the use of arsenicals accordingly. He warns against overstandardization of treatment and points out the frequent necessity for adjuvant therapy, such as alternating courses of vioform with those of carbarsone, with ten day rest periods intervening; tannin preparations and bismuth subcarbonate in cases presenting persistent dysentery or diarrhea; emetine in amebic hepatitis; dietary adjustment; colonic irrigations with antiseptics and other measures for secondary infection; proper surgical intervention when indicated in resistant cases.

Reed and Johnstone[2] summarize the results in 330 cases: "Our conclusion is that carbarsone is a valuable addition to the treatment of amebiasis because of an effectiveness at least as high as any other single drug, combined with low toxicity, capability of oral administration, noninterference with ordinary pursuits of the patient, lack of adjuvant requirements such as bed rest, diet, hospitalization and other drugs, and finally its relatively low cost. We have found a certain number of patients resistant to carbarsone and all other therapy."

It appears that carbarsone is a valuable addition to the antiamebic armamentarium. It must be considered, however, that not a few patients are resistant to this agent as well as to other amebicidal drugs, and that while toxic reactions appear to be uncommon, a few serious accidents have occurred after administration of the usual therapeutic doses of carbarsone. The individual susceptibility to arsenic compounds of each patient must be evaluated and evidences of toxic manifestations must be watched for carefully, both during the period of therapy and, in view of the slow excretion of the administered arsenic,[10] for a reasonable time afterward.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

CARBARSONE.—*p*-Carbamido-phenylarsonic acid.—*p*-Carbamido-benzenearsonic acid. — $NH_2CONH.C_6H_4As:O:(OH)_2$. —The *N*-carbamyl derivative of [*p*] arsanilic acid. Carbarsone contains from 28.1 to 28.8 per cent arsenic (As).

Actions and Uses.—Carbarsone is proposed for the treatment of intestinal amebiasis. It is administered usually by mouth; in acute amebic dysentery or in resistant cases with motile amebas in the stools, retention enemas may be employed. While carbarsone is said to be less toxic than acetarsone and serious untoward effects appear to be uncommon, cutaneous disturbances and other reactions common to arsenic compounds have been observed. It has been suggested that owing to its chemical structure (in which a modified amido group is in para position to the arsenic atom, similar to the arrangement in tryparsamide) the administration of carbarsone may lead to injury of the optic nerve. While visual disturbances appear to be quite rare, the possibility of their occurrence should nevertheless be kept in mind during the therapeutic use of the drug. A moderate increase in intestinal activity may be observed. Carbarsone, in common with other arsenicals, should ordinarily not be employed in the presence of hepatitis or kidney damage. Excretion of the administered arsenic is relatively slow; suitable rest periods must therefore be interposed in the treatment to prevent cumulative effects.

The diagnosis of amebiasis depends on the observation of motile forms or cysts of Endamoeba histolytica in stool specimens (repeated examinations are often necessary) or their recovery by means of the proctoscope from the intestinal mucosa; positive diagnosis can often be made by the latter procedure when stool examinations are negative, and this is considered to be the more satisfactory as well as the more rapid method of diagnosis in many cases.

In view of the frequency of persistent infection in the absence of marked symptoms, adequate therapy includes reexaminations and repetitions of courses of treatment.

Dosage.—Orally, for adults, the usual dose is 0.25 Gm. twice a day for ten days. If necessary this may be repeated following a ten day rest period. For children, the dosage may be reduced according to weight. As retention enemas, for adults, 2 Gm. of the drug dissolved in 200 cc. of warm 2 per cent sodium bicarbonate solution may be administered following a cleansing alkaline enema every other night for a maximum of five doses, if necessary. Because of the large dosage employed (a total of 10 Gm. over a period of nine days) oral administration should be interrupted during this interval.

Manufactured by Eli Lilly & Company, Indianapolis. No U. S. patent. "Carbarsone" is a registered U. S. trademark but the firm disclaims proprietary rights to the name.

Vials Carbarsone, 2 Gm. (31 grains).

Pulvules Carbarsone, 0.25 Gm. (3¾ grains).

Carbarsone is a white, almost odorless powder, having a slightly acid taste. It is very slightly soluble in water, slightly soluble in alcohol and nearly insoluble in ether and chloroform; freely soluble in alkalis and alkaline carbonates. The water solution yields an acid reaction to litmus paper.

Transfer 1 Gm. of carbarsone to a suitable test tube, dissolve in a solution containing 10 cc. of sodium hydroxide solution and 10 cc. of water, add 2 Gm. of sodium hydrosulphite and warm the mixture to 50 C.: a light yellow precipitate is formed in an excess of sodium hydroxide solution (*distinction from acetarsone*).

Dissolve 0.50 Gm. of carbarsone in 2 cc. of ammonia water, dilute to 5 cc. with water and add 3 cc. of magnesia mixture solution: no

8. Smithies, Frank: Editorial, Am. J. Digest. Dis. & Nutrition **1**: 147 (April) 1934.

9. Reed, A. C.: Amebiasis—A Clinical Summary, California & West. Med. **40**: 6 (Jan.) 1934.

10. Chen, M.-Y.; Anderson, H. H., and Leake, C. D.: Rate of Urinary Arsenic Excretion After Giving Acetarsone ("Stovarsol") and "Carbarsone" by Mouth, Proc. Soc. Exper. Biol. & Med. **28**: 145 (Nov.) 1930.

precipitate forms *(absence of inorganic arsenates)*; allow the solution to stand for some time or heat the solution for some time: a precipitate is produced. Add 10 cc. of sodium carbonate solution to 1 Gm. of carbarsone in a test tube and gently agitate the mixture: a complete solution results in five minutes. Shake 0.5 Gm. of carbarsone for five minutes with 10 cc. of diluted nitric acid, filter the mixture, and add a few drops of silver nitrate solution to the filtrate: at most only a very slight turbidity is produced within five minutes. Carbarsone melts with decomposition at 169 to 171 C. (the U. S. P. melting point determination method is to be used). Transfer 0.4 Gm. of carbarsone to a test tube, add 5 cc. of 20 per cent sodium hydroxide, stopper with a slotted cork from which is suspended a strip of moist red litmus paper, and heat gently: the litmus paper turns blue.

Dissolve 0.50 Gm. of carbarsone in 2 cc. of ammonia water and dilute to 10 cc. with water. This solution conforms to the test for heavy metals when treated according to U. S. P. X, p. 439, beginning with "warm it to about 50 C., etc." [The test for absence of arsanilic acid as described for tryparsamide, N. N. R., 1934, is not applicable to this compound.]

Incinerate 0.5 Gm. of carbarsone: not more than 0.1 per cent residue remains. Heat about 0.2 Gm., accurately weighed, of carbarsone for six hours at 100 C.: the loss in weight does not exceed 1.1 per cent.

Determine the arsenic of carbarsone by the method for arsenic in arsphenamine U. S. P. X, p. 67: the arsenic (As) content corresponds to from 28.1 to 28.8 per cent of the weight of the sample.

Transfer about 0.5 Gm. of carbarsone, accurately weighed, to a 500 cc. Kjeldahl flask. Determine the nitrogen content according to the method of Medical War Manual No. 6, Laboratory Methods of the U. S. Army, Second Edition Revised, page 222, begining with "Add 20 cc. of concentrated H_2SO_4. . . ." The nitrogen content is not less than 10.7 per cent, nor more than 11 per cent of the weight of the sample.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

JELKE'S GOOD LUCK VEGETABLE OLEOMARGARINE

Manufacturer.—John F. Jelke Company, Chicago.

Description.—Margarine prepared from hydrogenated cottonseed oil, cottonseed oil, salt, and sucrose; churned in milk.

Manufacturer.—The hydrogenated cottonseed oil is melted to a semiliquid state, churned with the cottonseed oil at a definite temperature, and then with pasteurized milk ripened with cultures of Streptococcus lacticus and associated aroma-producing strains. The resulting emulsion is solidified by cold water sprays, thoroughly cooled, and allowed to stand for a short period, subsequent to which salt and sugar are worked in and excess moisture is removed. The margarine is printed into 1, 2 and 5 pound blocks, which are automatically wrapped in parchment paper and packed in dated cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	12.5
Ash	3.2
Sodium chloride	3.1
Fat (ether extract)	82.7
Protein (N × 6.25)	0.9
Sucrose (copper reduction method)	0.7

Calories.—7.5 per gram; 213 per ounce.

MEAD'S DEXTRI-MALTOSE WITH VITAMIN B
(CONTAINS EXTRACTS OF WHEAT EMBRYO AND YEAST)

Manufacturer.—Mead Johnson and Company, Evansville, Ind.

Description.—Powdered mixture of Mead's Dextri-Maltose No. 2 (essentially maltose and dextrin) and extracts of wheat embryo and yeast to provide vitamins B and G.

Manufacture.—The extract of wheat germ is prepared by macerating wheat germ in cold water; the solution is filtered through a filter press. The extract of yeast is prepared by boiling a mixture of brewers' yeast and water; the solution is separated by centrifugation. The extracts of wheat embryo and yeast are added to the dextri-maltose syrup prepared as described for Mead's Dextri-Maltose No. 2 (THE JOURNAL, Oct. 31, 1931, p. 1302) in such proportion that 2 Gm. of the finished Dextri-Maltose with Vitamin B will contain the extracts of 1 Gm. of wheat germ and 0.3 Gm. of yeast. (Wheat embryo and yeast are both used as sources of vitamins B and G in that wheat germ is richer in B and yeast in G).

Analysis (submitted by manufacturer).—

	per cent
Moisture ("vacuum," 75 C.)	1.0
Ash	2.3
Fat (ether extract)	0.0
Protein (N × 6.25)	4.3
Reducing sugars as maltose	52.6
Dextrins (by difference)	39.8
Calcium (Ca)	0.02
Chlorine (Cl)	0.13
Copper (Cu)	0.002
Iron (Fe)	0.008
Magnesium (Mg)	0.10
Phosphorus (P)	0.34
Potassium (K)	0.72
Sodium (Na)	0.23

Calories.— 3.9 per gram; 111 per ounce.

Claims of Manufacturer.—A carbohydrate supplement to milk for use in infant feeding, supplying liberal amounts of vitamins B and G, copper and iron.

UNSWEETENED COOKING CHOCOLATE

(1) CENTRELLA BRAND
(2) COLONIAL
(3) EDWARDS BRAND
(4) MY-TE-GOOD BRAND
(5) N J C PURE FOOD
(6) QUINCY BRAND
(7) SUPREME COURT BRAND

Distributors.—(1) Central Wholesale Grocers, Inc., Chicago; (2) Merchants Service Corp., San Francisco, Chicago and New York; (3) The William Edwards Company, Cleveland; (4) Donahoe's, Pittsburgh; (5) Northern Jobbing Company, St. Paul; (6) Quincy Wholesale Grocery, Inc., Quincy, Mass.; (7) The W. H. Dunne Company, Norwich, New York.

Manufacturer.—Moffat, Inc., Boston.

Description.—Ground cacao nibs or "chocolate liquor" in cake form. Same as Moffat Cooking Chocolate Unsweetened, THE JOURNAL, Jan. 20, 1934, page 213.

Claims of Manufacturer.—Conforms to the United States Department of Agriculture definition and standard.

(1) ELCO BRAND CRYSTAL WHITE TABLE SYRUP
(2) ELCO BRAND GOLDEN TABLE SYRUP
(3) HAPPY HOME BRAND CRYSTAL WHITE SYRUP
(4) RED W BRAND GOLDEN SYRUP

Distributors.—(1) and (2) I. Cohen Grocer Co., St. Louis. (3) and (4) Wulfing Grocer Co., St. Louis.

Packer.—Union Starch and Refining Company, Granite City, Ill.

Description.—(1) and (3) A table syrup; corn syrup sweetened with sucrose; flavored with vanilla. The same as Union Brand Crystal White Syrup (THE JOURNAL, Sept. 3, 1932, p. 833).

(2) A table syrup; corn syrup flavored with refiners' syrup. The same as Union Brand Golden Table Syrup (THE JOURNAL, July 23, 1932, page 309).

(4) A table syrup; corn syrup flavored with refiners' syrup. The same as Golden Drip Brand Golden Table Syrup (THE JOURNAL, May 26, 1934, page 1763).

LAND O'LAKES UNSWEETENED EVAPORATED MILK

Distributor.—Land O'Lakes Creameries, Inc., Minneapolis.

Description.—Unsweetened evaporated milk.

Manufacture.—The procedure of evaporation and canning, and the analysis are essentially the same as for the usual evaporated milk (THE JOURNAL, April 16, 1932, p. 1367).

Claims of Manufacturer.—See announcement on the advertising of the Evaporated Milk Association (THE JOURNAL, Dec. 19, 1931, p. 1890).

CALIFORNIA HOME BRAND TOMATO CATSUP

Manufacturer.—California Conserving Company, Inc., San Francisco.

Description.—Tomato catsup containing tomatoes, sucrose, distilled vinegar, sodium chloride, onions, cassia, mace, cloves, garlic, celery seed, pepper.

Manufacture.—Sorted ripe tomatoes are washed in revolving spray washers, inspected, passed through live steam to loosen the skin, pulped, screened to remove seeds, cores and peelings, and conveyed to cooking kettles. Formula proportions of the ingredients (excepting distilled vinegar) are cooked for fifteen minutes, distilled vinegar is added and the steam is turned off until batches are tested for refractometer reading, mold count and color reading and when found to conform to the standard for this brand of catsup are screened, and automatically bottled at 88 C.

Analysis (submitted by manufacturer).—

	per cent
Moisture and volatile substances	67.0
Total solids	33.0
Ash	5.5
Fat (ether extract)	0.4
Protein (N × 6.25)	2.5
Reducing sugars as invert sugar	8.0
Sucrose	16.1
Crude fiber	0.3
Titratable acidity as citric acid	2.0
Volatile acid as acetic	0.9

Calories.—1.2 per gram; 34 per ounce.

Claims of Manufacturer.—The speed of handling tomatoes from field to finished product keeps mold and bacteria at a minimum and protects tomato flavor and color.

MORO PURE VIRGIN OLIVE OIL

Distributor.—E. Cerruti, Inc., New York City.

Special Distributor.—Mencacci & Co., Inc., Jamaica, N. Y.

Manufacturer.—Tomaso Moro & Figli, Genoa, Italy.

Description.—Imported Italian first cold pressing olive oil.

Manufacture.—Selected sound olives from different districts in Italy are pressed cold to expel the oil.

The first pressing oil only is filtered, refined and sealed in tins under this brand name.

Analysis (submitted by manufacturer).—

Specific gravity, 15 C./15 C.	0.918
Refractive index at 25 C. (Zeiss)	61.6
Saponification number	192.
Iodine number (Hubi)	81.
Free fatty acids as oleic acid	0.6
Cottonseed oil	None
Mineral oil	None
Peanut oil	None
Sesame oil	None

Calories.—9 per gram; 256 per ounce.

Claims of Manufacturer.—Pure virgin olive oil.

ARROWHEAD SOFT SPRING WATER

Distributor.—California Consolidated Water Co., Los Angeles.

Description.—Spring water of low mineral content and practically free of micro-organisms.

Collecting and Bottling.—The springs are enclosed in a sealed tunnel located at an elevation of 5,000 feet in an uninhabited area of the San Bernardino Mountains, California. The water (10 C.) flows by gravity through steel pipe-lines to cement holding tanks, from which it is loaded by gravity flow into special railway tank cars. The water is delivered into holding tanks in the cities, where it is automatically bottled and distributed.

All incoming demijohns are thoroughly cleansed with 2.5 per cent sodium hydroxide solution, sprayed with chlorine water and flushed with well and distilled water; forty-nine immersions and rinsings occur during this process.

The tunnel and pipe-line are cleaned regularly with a solution of sodium hypochlorite (NaOCl) and copper sulphate ($CuSO_4$) and properly flushed with water thereafter. A filter placed in the line removes any flotation material. Cement storage and holding tanks are cleaned after each unloading by spraying with a solution of sodium hypochlorite (two ounces per 50-75 gallons) and flushing with fresh water. They are scrubbed at frequent intervals. The interior of the tank cars is coated with wax, which is replaced each year. The tanks are cleaned as described for the cement tanks after each unloading and prior to reloading.

Analysis (submitted by manufacturer).—

Sanitary Analysis	Parts per million
Turbidity	none
Color	none
Odor	none
Oxygen consumed	none
Oxygen dissolved	9.6
Free carbon dioxide (CO_2)	3.9
Nitrogen as:	
Ammonia nitrogen	none
Albuminoid nitrogen	none
Nitrite nitrogen	none
Nitrate nitrogen	none

Chemical Analysis	
Residue on evaporation	85.0
Residue after ignition	12.8
Ammonia nitrogen as NH_4	none
Chloride (Cl)	1.4
Phosphate (PO_4)	trace
Iron (Fe)	trace
Calcium (Ca)	13.1
Magnesium (Mg)	1.9
Silica (SiO_2)	15.3
Sulphate (SO_4)	1.2
Bicarbonate (HCO_3)	73.8
Sodium (Na)	11.0
Potassium (K)	0.9
Metaborate (BO_2)	none
Arsenate (AsO_4)	none
Bromide (Br)	none
Iodide (I)	none
Manganese (Mn)	none

Hypothetical Combination	Parts per million
Sodium nitrate ($NaNO_3$)	0.4
Potassium chloride (KCl)	1.7
Sodium chloride (NaCl)	1.0
Sodium sulphate (Na_2SO_4)	1.7
Magnesium bicarbonate ($Mg(HCO_3)_2$)	11.5
Sodium bicarbonate ($NaHCO_3$)	34.7
Calcium bicarbonate ($Ca(HCO_3)_2$)	52.7
Silica (SiO_2)	15.3

Micro-Organisms.—Bacterial examination shows none or very few bacteria per cubic centimeter and no Bacillus coli.

Claims of Manufacturer.—A pure spring water of low mineral content.

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1. BAKEBEST BAKERS FLOUR
2. BAKER'S SPECIAL HARD WHEAT FLOUR
3. CRAFTSMAN BAKER'S FLOUR
4. LA CAMPANA FLOUR
5. MELLO LOAF BAKERS FLOUR
6. VICTOR FLOUR

Manufacturer.—Liberty Mills, San Antonio, Texas.

Description.—(1) Hard red winter wheat patent flour; bleached. (2) and (3) Hard red winter wheat standard patent flour; bleached. (4), (5) and (6) Hard red winter wheat first clear flour; bleached.

Manufacture.—Selected hard red winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, p. 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-ninth ounce per barrel).

(a) WORCESTER SALT (A-BULK)
WORCESTER SALT (CANNERS "A")
WORCESTER SALT (FLOUR)
WORCESTER SALT (FLOUR "AA")
(b) WORCESTER SALT (FLAKE)
WORCESTER SALT (FLAKE CHEESE)
WORCESTER SALT (FLAKE FLOUR)
WORCESTER SALT (BAKERS FLAKE)

Manufacturer.—Worcester Salt Company, New York.

Description.—Salts for commercial purposes in "flake" and cube forms. The flour salts contain 1 per cent added calcium phosphate, which tends to preserve their free running properties.

Manufacture.—The preparation is the same as that described for Worcester Salt (THE JOURNAL, April 22, 1933, p. 1237). One per cent calcium phosphate is added to the flour salts before packing.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 28, 1934

SERUM THERAPY IN POLIOMYELITIS

The prevalence of epidemic poliomyelitis in southern California has revived interest in treatment of the acute disease with serum. Largely as a result of the studies of Aycock and his associates,[1] opinion had become crystallized that convalescent serum was highly effective in preventing and minimizing paralysis if given in the preparalytic stage. In the New York epidemic of 1931, Park carried out a rigorously controlled therapeutic experiment in which unselected alternate patients received convalescent serum in the preparalytic stage. He could find no difference either in incidence of paralysis or in mortality rates in the two groups.

The treatment of the acute stage of poliomyelitis has now been reviewed by Harmon,[2] who has pointed out that many preparalytic cases are destined never to result in paralysis. In other words, many instances of early poliomyelitis diagnosed in the preparalytic stage by pleocytosis and an increase in protein in the cerebrospinal fluid are cases of nonparalytic poliomyelitis. According to data collected from the literature of 531 untreated preparalytic cases of poliomyelitis, paralysis never appeared in 380 (71.5 per cent). The implications of these data on the alleged beneficial results of convalescent and other serums are obvious.

Apparently there are no clear-cut experimental data that serum of any type affects the course of the experimental disease in monkeys. The in vitro virucidal test that utilizes monkeys is the only reliable test of poliocidal properties in a serum. It has long been assumed but yet has to be definitely proved that the therapeutic efficacy of convalescent or other serum is measured by this test. Indeed, the administration of tested serum during the incubation period of the experimental disease, even in the preparalytic stage, has been a signal failure except in the hands of a few investigators. In these reports the conclusions drawn might well be questioned on the basis of the data presented.

During the last five years, many new facts concerning the incidence and distribution of the poliocidal substances have been developed. These substances are to be found in comparable quantity in the serum of most adults as well as in the serum of poliomyelitis convalescents. Such results have led to the hypothesis that subclinical attacks of poliomyelitis are as common as subclinical diphtheria and scarlet fever. Storage of human convalescent serum (and presumably normal human serum) for two or three years has been shown to have little effect on the concentration of neutralizing substance. The poliocidal substance is relatively thermostable, withstanding 56 C. for half an hour, and is little affected by filtration through Berkefeld or Seitz filters.

The severity of the epidemic, the place on the epidemic curve when treatment is applied, the age of the patient and the type and degree of orthopedic after-care are all factors of as much importance in estimating the outcome from poliomyelitis as the use of serum itself. Notwithstanding the total failure of statistical presentations to make a case for serum therapy in this disease, clinical observations almost universally indicate rapid symptomatic response to serum administration. There seems to be an immediate drop in temperature and improvement in symptoms that cannot be totally disregarded. These clinical results have been shown equally after both normal adult serum and convalescent serum, so that there seems to be little preference between these two types of serum.

Reports on the use of serum for passive protection in epidemics are inconclusive. In two villages in Sweden, Davide[3] protected seventy-three persons under the age of 25 years with convalescent serum, while a group of eighty-four persons of similar age served as an uninoculated control group. Among the first group but one case of poliomyelitis occurred, while in the latter group there were fourteen cases of the frank disease and several alleged "abortive" cases. Brebner[4] protected 1,300 children with whole adult blood in a single town during the eastern Pennsylvania epidemic of 1932 without a single frank instance of poliomyelitis occurring in the protected group, while thirty-two additional cases of paralysis occurred in the remaining child populace of approximately 3,000 children. Henry and Johnson[5] reported on the immunization of 2,255 children, largely with parents' whole blood, during the Philadelphia epidemic of 1932. Four cases of frank

1. Aycock, W. L., and Luther, E. L.: Preparalytic Poliomyelitis: Observations in One Hundred and Six Cases in Which Convalescent Serum Was Used, J. A. M. A. **91**: 387 (Aug. 11) 1928. Aycock, W. L.; Luther, E. H.; McKhann, C. F.; Smith, E. C., and Kramer, S. D.: Preparalytic Poliomyelitis: Further Observations on Treatment with Convalescent Serum, J. Infect. Dis. **45**: 175 (Sept.) 1929.

2. Harmon, P. H.: Poliomyelitis: I. Experimental and Theoretical Basis for Serum Therapy, Am. J. Dis. Child. **47**: 1179 (June) 1934. Harmon, P. H.: Poliomyelitis: II. Results of Treatment in the Acute Disease; Analysis of Reports on 4,400 Patients Treated with Serum; Observations on 2,660 Untreated Patients, ibid. **47**: 1217 (June) 1934.

3. Davide, H.: Le sérum de convalescent dans la prophylaxie de la poliomyélite, Bull. de l'Office internat. d'hyg. pub. **20**: 74 (Jan.) 1928.

4. Brebner, W. B.: Preliminary Report of the Results of the Administration of Normal Adult Serum in the Prophylaxis of Poliomyelitis During the 1932 Epidemic, in International Committee for the Study of Infantile Paralysis: Poliomyelitis, Baltimore, Williams & Wilkins Company, 1932.

5. Henry, J. N., and Johnson, G. E.: Acute Anterior Poliomyelitis in Philadelphia: A Comparative Study of the 1916 and 1932 Epidemics, J. A. M. A. **103**: 94 (July 14) 1934.

poliomyelitis and eight nonparalytic cases developed in this group, an attack rate greater than that in the general populace. It is certain in the data of the latter authors, as well as in the data of Davide, that many of these failures should not be charged against the serum, as the interval between injection of serum and onset was less than the incubation period of the disease. It will be difficult to evaluate the efficacy of a prophylactic agent in poliomyelitis on account of the low attack rate even in epidemics, and because there is no method of defining the susceptible group. More data and observation are needed before the final opinion can be given as to the value of serum treatment and prophylaxis in poliomyelitis.

MEDICAL ETHICS AND NEW METHODS OF PRACTICE

Gradual changes in the nature of our civilization have brought ever more complex problems for solution by the medical profession. As has been stated repeatedly in these columns, the ethical principles which guide medicine are fundamentally so sound that they may be adapted to any situation arising in medical practice, provided those concerned wish to observe the spirit of these principles. Nevertheless, physicians involved in new types of organization, such as contract practice, industrial practice, hospital practice, university practice, and the practice of medicine by lay corporations which employ physicians, have been brought before the judicial councils and committees on ethical relations of various medical bodies, because of infringements of these ethical principles. In some cases there have apparently been difficulties of interpretation. To overcome these difficulties, the Judicial Council of the American Medical Association, at the Cleveland session, presented three amendments to the Principles of Medical Ethics. These were heartily endorsed by the Reference Committee on Amendments to the Constitution and By-Laws and then adopted by the House of Delegates as guiding principles for organized medicine.

The term "contract practice" is anathema to the vast majority of individual practitioners in this country, yet contracts of all kinds are matters of daily life in all forms of industry. Conceivably there are situations in which the practice of medicine under a contract may be necessary or desirable. In order to elucidate this phase of medical practice, the Principles of Medical Ethics, chapter II, article V, section 2, is now amended by addition of the following wording:

> By the term "contract practice" as applied to medicine is meant the carrying out of an agreement between a physician or a group of physicians, as principals or agents, and a corporation, organization or individual, to furnish partial or full medical services to a group or class of individuals for a definite sum or a fixed rate per capita.
>
> Contract practice per se is not unethical. However, certain features or conditions if present make a contract unethical, among which are: 1. When there is solicitation of patients, directly or indirectly. 2. When there is underbidding to secure the contract. 3. When the compensation is inadequate to assure good medical service. 4. When there is interference with reasonable competition in a community. 5. When free choice of a physician is prevented. 6. When the conditions of employment make it impossible to render adequate service to the patients. 7. When the contract because of any of its provisions or practical results is contrary to sound public policy.
>
> Each contract should be considered on its own merits and in the light of surrounding conditions. Judgment should not be obscured by immediate, temporary or local results. The decision as to its ethical or unethical nature must be based on the ultimate effect for good or ill on the people as a whole.

Group practice and clinical practice are also phases of medical work that have aroused opposition in many communities, because of the introduction of advertising methods and commercial promotion into their work. In some places groups or clinics have employed business managers, unfamiliar with the medical point of view, who have attempted to introduce unprofessional methods into medical practice. In order to establish the proper relationship between groups and clinics with the individual practice of medicine, the Principles of Medical Ethics will now contain the following statement:

> The ethical principles actuating and governing a group or clinic are exactly the same as those applicable to the individual. As a group or clinic is composed of individual doctors, each of whom, whether employer, employee or partner, is subject to the principles of ethics herein elaborated, the uniting into a business or professional organization does not relieve them either individually or as a group from the obligation they assume when entering the profession.

Regardless, however, of the damage wrought to scientific medicine by physicians who engage in contract practice or by groups of physicians competing with the individual practitioner, the worst possible type of new methods in medical practice is the incorporation by business men of organizations to engage in the practice of medicine, employing physicians on salaries and exploiting the services of these physicians unethically to the public. The most conspicuous example of such an organization is the United Medical Service, Inc., which began a few years ago to advertise its services to the people of Chicago. Regarding such types of medical practice, the Judicial Council was definite. The Principles of Medical Ethics now contains the following statement:

> It is unprofessional for a physician to dispose of his professional attainments or services to any lay body, organization, group or individual, by whatever name called, or however organized, under terms or conditions which permit a direct profit from the fees, salary or compensation received to accrue to the lay body or individual employing him. Such a procedure is beneath the dignity of professional practice, is unfair competition with the profession at large, is harmful alike to the profession of medicine and the welfare of the people, and is against sound public policy.

As was stated in the introduction to these comments, these modifications of the Principles of Medical Ethics do not in any way modify the basic character of these principles. The Principles of Medical Ethics was established for the protection of the public primarily. Methods of promotion that sell medical practice on the basis of exaggerated claims, on a fee basis rather than

the quality of service rendered, methods of practice that break down the intimate personal relationship that must exist between doctor and patient; methods that delegate the responsibility of the attending doctor to a group or a corporation or a business manager, carry with them a menace to the life and health of the people who are served.

Physicians will do well to familiarize themselves with these new statements of principle, now a part of the ethics of organized medicine. The young physician who is tempted by the offer of some commercial agency to enter into such schemes or combinations should bear in mind that he thereby jeopardizes his entire future in the practice of medicine and sacrifices the medical birthright for which he has already paid six or seven years of his life.

A POLIOMYELITIS VACCINE

The attention devoted in newspapers and current periodicals to experiments now under way in New York for the development of a vaccine against poliomyelitis recalls the fact that such attempts are not wholly new. As early as 1910, Flexner, Lewis and others attempted to develop an immunizing agent of this type. Abramson in 1917, working in the Laboratories of the Department of Health of the City of New York, tested the value of a vaccine prepared from a virus killed by heat according to a method used by Semple for developing a vaccine against rabies. In his experiments, five monkeys each received successive vaccinations with 5 cc. of a 10 per cent emulsion, each dose of which had been heated to 55 C. for half an hour. Since that time many other investigators have attempted to produce a vaccine that might be established as efficacious, but thus far the results have not proved satisfactory. Now Dr. Maurice Brodie, working in the Laboratories of the Department of Health of the City of New York, with funds provided by the Rockefeller and other foundations, has developed a vaccine that seems to possess the likelihood of efficacy in the diagnosis and treatment of this disease. Influenced by the earlier work already mentioned and also by the favorable results recently obtained with antigens inactivated by germicides in the prevention of other virus diseases, investigators have attempted to develop a new antigen against poliomyelitis. It was felt that previous workers had not used sufficiently large doses of the antigen and that their tests for immunity were too severe, since convalescent monkeys are only relatively immune.

According to a special communication from Dr. William H. Park, the first experiments with virus inactivated by formaldehyde produced an appreciable immunity in a majority of the animals inoculated. It was found, however, that a concentration of 0.3 per cent of solution of formaldehyde was too irritating to the skin; then with the use of the incubator instead of the icebox temperature a lower concentration of the germicide was used. With antigens prepared in this way the majority of monkeys inoculated proved resistant to direct intracerebral inoculation of the virus. Moreover, serum obtained from these monkeys possessed neutralizing substances against the virus of poliomyelitis. These antigens rarely produced any irritation of the skin when injected intracutaneously. Using extraordinary precautions, the group in charge of these investigations decided to test out the antigenic properties on themselves before attempting inoculation of children with the antigen. Several members of the research group were injected with a vaccine prepared by adding formaldehyde to a suspension of material from the infected spinal cord. It is proposed, after testing the blood of those who have been inoculated to determine the extent of the immunity developed, to carry the investigations further, inoculating children against this disease. The vaccine will, of course, have been established as absolutely harmless by the injection into the members of the committee and also as to its efficacy by the studies that have been made on monkeys inoculated with virus following inoculation with the vaccine.

Here is a well controlled scientific experiment in which the safety of all those concerned is guaranteed by modern scientific methods. If successful, it should yield valuable information for the future. It should do much to develop a means for preventing one of the most dreaded of diseases, which strikes fear to the hearts of parents in every community in which it appears.

Current Comment

SCURVY AND CLOTTING OF BLOOD

Although clinical scurvy has become more or less of a rarity in civilized countries, interest in the disease as produced in experimental animals continues. It was in this connection that the first vitamin was synthesized in the laboratory. Again, the success in elucidating the etiology of scurvy and in establishing effective treatment has led to the hope of obtaining further information on the details of the pathogenesis of the disease through experimental studies. Widespread hemorrhage has long been noted as one of the features of the pathology of scurvy, so that attention has been given to changes in the blood itself. Thus concentration of the blood, decrease both in red cells and in hemoglobin, diminution of resistance to hemolysis and decrease in serum proteins have been reported by various investigators. In a recent study Presnall[1] has paid special attention to the alterations of the clotting of the blood in scurvy. It was observed that increase in clotting time is the earliest sign of the disease in guinea-pigs, a measurable change taking place before the appearance of the usual symptoms. At the same time a marked decrease in the number of platelets was demonstrated and, in corroboration of other investigations, a definite anemia. It was further observed that, when the blood

1. Presnall, A. K.: J. Nutrition 8:69 (July) 1934.

of scorbutic guinea-pigs was allowed to clot and then either centrifugated or permitted to synerese, from two to three times more serum is obtained than when normal blood is similarly treated. These observations indicate that, in addition to structural defects in the vascular system, the blood itself undergoes alterations, possibly physical as well as chemical, that may influence the occurrence of hemorrhage in scurvy.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, Central daylight saving time. The speaker will be Dr. W. W. Bauer. The next three broadcasts will be as follows:

August 2. Dog Days.
August 9. Death Angel.
August 16. Black Widow.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Dr. McLester Honored.—The Jefferson County Medical Association gave a dinner at the Tutwiler Hotel in Birmingham, July 7, in honor of Dr. James Somerville McLester, President-Elect of the American Medical Association. Speakers reviewing the professional and civic activities of Dr. McLester included Dr. George S. Graham, president of the county society; Dr. Cabot Lull, Birmingham; Dr. William M. Cunningham, Jasper, president of the state medical association; Dr. James E. Paullin, Atlanta; George H. Denny, D.C.L., president of the University of Alabama, and C. B. Glenn, superintendent of schools of Birmingham.

CALIFORNIA

Jailed for Narcotic Violation.—Dr. Leman D. Cruice, San Diego, is now serving a fifteen months sentence in the federal prison on McNeil Island, Wash., for violation of the narcotic laws. He went to trial in the U. S. District Court at San Diego on five counts. Two of the charges were dismissed, but he was found guilty of the remaining three, March 9. On each of these he was sentenced to serve fifteen months, the sentences to run concurrently.

Changes at University.—Included among recent promotions at the University of California Medical School, San Francisco, are the following:

Dr. Edward L. Munson, professor of preventive medicine.
Dr. Edward B. Shaw, associate clinical professor of pediatrics.
Nathan Shock, Ph.D., assistant professor of physiology.
Dr. Hamilton H. Anderson, assistant clinical professor of pharmacology.
Dr. Keene O. Haldeman, assistant clinical professor of orthopedic surgery.

Ground Squirrel Eradication.—A year's campaign to eradicate ground squirrels will be carried on in Tulare County under a special fund of $25,000 appropriated by county supervisors, according to the bulletin of the state board of health, July 7. The state board recently conducted a survey of bubonic plague in several counties, including Tulare, as the result of a noticeable increase in the ground squirrel population. Six ground squirrels from Tulare County were found to be plague infected, June 9, according to *Public Health Reports*. June 16, four ground squirrels and one wood rat from Modoc County were found to be plague infected.

Infantile Paralysis in San Francisco.—Dr. Jacob C. Geiger, health officer of San Francisco, issued a statement July 19 on the present status of the epidemic of poliomyelitis in San Francisco. Ninety-seven cases have occurred since May 1, with eight deaths. No new case had been reported for one week and only eleven cases were in quarantine, most of them in hospitals. The department of health has been assisted by an advisory committee comprising Karl F. Meyer, Ph.D., director, Hooper Foundation, University of California; Dr. William Palmer Lucas, representing the San Francisco County Medical Society; Dr. Edward B. Shaw, University of California School of Medicine; Dr. Le Roy C. Abbott, orthopedic surgeon; Dr. Harold K. Faber, Stanford University School of Medicine; Dr. James W. Ward, member, health advisory board; Dr. Adolph E. Schmidt, member, health committee, board of supervisors; Dr. Isaac W. Thorne, president, San Francisco County Medical Society, and A. J. Gallagher, chairman, finance committee, board of supervisors.

COLORADO

Society News.—At the midsummer meeting of the Arkansas Valley Medical Association in Canon City, July 14, speakers included Drs. John W. Amesse, Denver, on "Difficult Infant Feeding Cases"; George P. Lingenfelter, Denver, "Treatment of Eczemas, Infantile and Adult"; William P. McCrossin Jr., Colorado Springs, "Sterility, Its Diagnosis and Treatment," and Fred M. Heller, Pueblo, "Treatment of Nephritis." Features of the entertainment were a trap shoot and golf tournament.——Speakers before the Boulder County Medical Society in Boulder, June 14, were Severance Burrage, Ph.D., and Bertram B. Jaffa, Denver, on "Microbial Fingerprints, Their Relation to Respiratory Infections," and "Immunization Campaign in Denver," respectively.——Dr. William S. Bartholomew, Manzanola, among others, spoke before the Crowley County Medical Society in Ordway, June 13, on venereal diseases.——At a meeting of the Fremont County Medical Society in Canon City in May, Dr. Alexander D. Waroshill, Florence, presented a paper on "Oxygen Therapy."——Dr. George L. Pattee, Denver, among others, discussed "Treatment of Maxillary Sinusitis" before a joint meeting of the Larimer County Medical Society and the woman's auxiliary, June 6, in Fort Collins.

CONNECTICUT

Campaign Against Mosquitoes.—Hundreds of men are employed under federal auspices in eliminating the breeding places of mosquitoes in Connecticut. R. C. Botsford of the state experimental station in New Haven stated that in a few months workmen will have drained all but 500 of the 18,000 acres of salt marsh along the Connecticut shores. About $100,000 is being expended on the project. An attempt is being made in this campaign to keep water from flooding marshes at high tide with the use of tide gates. These gates, which have been installed at Lighthouse Point and Indian Neck, hold the tide back from the marshes, lowering the water level of the upper creek and thus allowing the ditches to function normally. In this campaign, local chambers of commerce, boards of health and town officials have pledged themselves to keep ponds, ditches, dumps and rain barrels clear of breeding facilities.

DELAWARE

Society News.—Dr. Isidor S. Ravdin, Philadelphia, addressed the New Castle County Medical Society in Wilmington, May 15, on "Use and Abuse of Fluids." Dr. John A. Kolmer, Philadelphia, addressed the society, April 17, on "Present Status of Biologic Therapy."

Dr. Orr Honored.—Dr. William P. Orr Jr., Lewes, was honored at a dinner given by the Sussex County Medical Society, June 21, in commemoration of his completion of fifty years of practice. Dr. Robert B. Hopkins, Milton, presented Dr. Orr with a loving cup. Dr. Orr is president of the Delaware State Board of Health and previous to his retirement a few years ago was medical officer in charge at the Delaware Breakwater Quarantine Station of the U. S. Public Health Service.

FLORIDA

State Board Election.—Dr. Simon E. Driskell, Jacksonville, was elected president of the Florida State Board of Medical Examiners, June 12, and Dr. Horace A. Day, Orlando, was chosen vice president. Dr. William M. Rowlett, Tampa, was reelected secretary.

Munch Denied a License.—It is reported that the state board of medical examiners refused to renew the license to practice medicine in Florida of Dr. George A. Munch, Tampa, at its meeting in Jacksonville, June 12. Munch was convicted

in the federal courts in 1926 and served a term in the Atlanta penitentiary on charges of using the mails to defraud in connection with the Florida diploma mill.

Society News.—Dr. Frederick K. Herpel, West Palm Beach, was elected president of the Florida Radiological Association at its annual meeting in Jacksonville, April 30; Dr. Wilfred McL. Shaw, Jacksonville, secretary for many years, vice president, and Frazier J. Payton, Miami Beach, secretary.——Dr. Thomas H. Wallis, Ocala, was recently elected president of the Central Florida Medical Association, and Dr. James L. Strange, McIntosh, secretary.

GEORGIA

Society News.—Dr. Launcelot Minor Blackford was installed as president of the Atlanta Clinical Society, recently, succeeding Dr. Joseph C. Massee.——At a meeting of the Georgia Medical Society, May 22, Dr. John L. Elliott, Savannah, discussed pneumothorax, and Dr. St. Julien R. de Caradeuc, Savannah, reported two unusual cases of the eye.——Speakers before the Crisp County Medical Society at Cordele, May 17, were Drs. Calvin B. Stewart, Atlanta, on cancer and Richard Hugh Wood, Atlanta, glandular fever.——Dr. Floy S. Rogers, Coleman, read a paper on "Cardiac Conditions Associated with Pain" before the Randolph County Medical Society at Cuthbert, June 7.——Dr. Samuel A. Boland, Jefferson, addressed the Jackson-Barrow Counties Medical Society, June 4, on "Rheumatism in Children."——Dr. James L. Campbell read a paper on "Cancer as We Find It in Georgia: Its Diagnosis and Treatment" before the Fulton County Medical Society in Atlanta, July 5.

ILLINOIS

Personal.—Dr. Roy Sexton, Streator, received the merit award of Northwestern University Alumni Association on "illumination night" in Evanston, Ill., preceding the annual commencement exercises, June 15. The award is a certificate and is given annually to alumni for "worthy achievement which has reflected credit upon their alma mater."

Chicago

Dr. Davis Made Emeritus Professor.—Dr. Haim I. Davis, professor of psychiatry at the University of Illinois College of Medicine since 1926, has been made emeritus professor, effective September 1. Dr. Davis has been requested to continue with his teaching, however. He has been associated with the school since 1908.

United Medical Service.—Superior Judge James J. Kelly refused to vacate an order granting the state of Illinois leave to file quo warranto proceedings against United Medical Service, Inc., July 14. These proceedings, instituted May 12, question the right of the clinic to engage in the corporate practice of medicine under the provisions of the medical practice act of Illinois. The court granted the request of the attorney for the clinic to have a jury trial and gave him sixty days in which to file a bill of exceptions and thirty days in which to demur to the petition for quo warranto, the Chicago *Tribune* reports (THE JOURNAL, May 19, p. 1686).

Dr. Wallgren Gives Sachs Lectures.—Dr. Arvid Wallgren, professor of pediatrics and chief of the Children's Hospital at Gothenburg, Sweden, delivered the Theodore B. Sachs resident lectures in tuberculosis of the University of Illinois College of Medicine, June 6-7. These lectures were established at the college for a five year period by the Chicago Tuberculosis Institute. During the reunion of the alumni of the college, Dr. Edward W. A. Ochsner, professor and head of the department of surgery, Tulane University School of Medicine, New Orleans, gave the alumni memorial lecture on "Postoperative Care in Abdominal Surgery Based on Clinical and Experimental Observations."

INDIANA

Society News.—Speakers before the Fifth District and Parke-Vermillion County medical societies at Turkey Run, June 23, were Drs. William W. Bauer, Chicago, and George E. Brown, Rochester, Minn., on "The Medical Profession and the Public Health" and "Newer Ideas of Hypertension," respectively.

Health at Evansville.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million for the week ended July 14 indicate that the highest mortality rate (21.8) appears for Evansville and that the rate for the group of cities as a whole was 10. The mortality rate for Evansville for the corresponding week of 1933 was 11.1 and for the group of cities, 9.6. The annual rate for eighty-six cities for the twenty-eight weeks of 1934 was 12 as against a rate of 11.4 for the corresponding period of 1933. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for wide areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

IOWA

Society News.—A symposium on gastric and duodenal ulcer constituted the meeting of the Black Hawk County Medical Society at Wameso Lodge, June 19; speakers were Drs. Walter L. Palmer and Lester R. Dragstedt, both of Chicago.——Dr. Donald P. Abbott, Chicago, addressed the Cerro Gordo County Medical Society, June 21, on "Indigestion, the Diagnosis of Stomach Disorders and Their Treatment."——At a meeting of the Clinton County Medical Society, June 7, Drs. Howard R. Hartman and Joseph G. Mayo, Rochester, Minn., spoke on "Lesions of the Small Intestine Other Than Peptic Ulcer" and "Secondary Anemias," respectively.——The Hardin County Medical Society was addressed in Iowa Falls, June 26, by Dr. Julia Cole, Iowa Falls, on "Diagnosis and Treatment of Bronchial Asthma."

KANSAS

Executive Secretary for State Society.—Mr. Clarence Munns, formerly of the Phillips Petroleum Company, has been named executive secretary of the Kansas Medical Society. He will visit other state executive offices before opening his office in Wichita about August 1. Mr. Munns was appointed at a meeting in Wichita, June 24. Creation of this position was authorized at the recent meeting of the state medical society.

KENTUCKY

Pioneer Physicians Commemorated.—A reproduction of a pioneer cabin on which is mounted a memorial tablet bearing the names of twenty-seven pioneer physicians was dedicated at special ceremonies in the Pioneer Memorial State Park at Harrodsburg, June 21, by the Kentucky State Medical Association and the Kentucky Pioneer Memorial Association. Dr. Arthur T. McCormack, Louisville, secretary of the state medical association, made the dedicatory address and four descendants of Dr. Thomas Walker, said to have been the first explorer of Kentucky, unveiled the tablet. At a banquet following the ceremonies Dr. Irvin Abell, Louisville, presided and addresses were made, among others, by Drs. Philip F. Barbour, Louisville, on "The Pioneer Doctor," and Mrs. Bartlett K. Menefee, Covington, president of the woman's auxiliary of the state medical association, on "The Pioneer Doctor's Wife." The auxiliary will later fit the cabin as a replica of a pioneer physician's office, it was announced.

Society News.—Dr. Claude T. Wolfe, Louisville, addressed the McCracken County Medical Society at Paducah, May 23, on "Relation of Chronic Sinus Disease to Bronchial Disorders," and Dr. Oscar O. Miller, Louisville, "Nontuberculous Infections of the Upper Respiratory Tract."——Dr. J. Isfred Hofbauer, Cincinnati, addressed the Mason County Medical Association, Maysville, May 9, on "Early Diagnosis and Etiology of Uterine Carcinoma." Dr. Alphonse R. Vonderahe, Cincinnati, addressed the society at a special meeting, May 2, on diseases of the brain.——At the annual meeting of the Southwestern Kentucky Medical Association in Paducah, May 5, speakers were Drs. Willis C. Campbell, Memphis, on "Ununited Fractures"; Hollis E. Johnson, Nashville, "Collapse Therapy in Pulmonary Tuberculosis"; William T. Black, Memphis, "Uterine Bleeding"; John A. Toomey, Cleveland, "Treatment of Acute Contagious Diseases," and Edward R. Palmer, Louisville, "The Lesser Social Evil." Dr. George W. Crile, Cleveland, made the banquet address.——Dr. Albert L. Bass, Louisville, was chosen president of the Eye, Ear and Throat Section of the Kentucky State Medical Association at the annual meeting in May.

MARYLAND

Personal.—An exhibition of rare medical manuscripts and old books, chiefly the works of Jewish physicians, was recently on display at the Central Enoch Pratt Free Library, through the courtesy of Dr. Harry Friedenwald, Baltimore, who has been a collector for thirty years.——Dr. Adolf Meyer, Henry Phipps professor of psychiatry, Johns Hopkins University School of Medicine, Baltimore, was awarded the honorary degree of doctor of science by Yale University, June 21.——Drs. Daniel H. and Lauretta E. Kress, Takoma Park, cele-

brated their golden wedding anniversary, July 9; 2,000 persons at whose birth Dr. Lauretta Kress had officiated were invited to the reception and 500 were in attendance. Dr. Lauretta Kress has assisted at 3,571 births during her career.

MASSACHUSETTS

Dr. Shattuck Fined.—According to the *New England Journal of Medicine*, Dr. Ray H. Shattuck, Boston, was found guilty on five counts in the Dorchester District Court, June 28, on a charge of prescribing drugs not in good faith and not in the course of his professional practice. A fine of $50 on each count was imposed. The case was appealed.

Outbreak of Gastro-Intestinal Disorder.—About 600 persons suddenly became ill recently in Fitchburg. The water supply was investigated immediately. Since a C W A camp, employing about thirty men, was situated near the watershed of Overlook reservoir, which served most of the persons stricken, pollution from this source was suspected. Specimens taken from twenty-four workers at the camp were negative for typhoid, however. Analyses of the water showed the presence of B. coli the first day. Subsequent analyses showed the reservoir to be free from the colon bacillus, and no more cases appeared after the third day. It was believed that heavy rains at the time contaminated the reservoir. No deaths were reported.

MICHIGAN

Physician Honored.—A reception was held for Dr. and Mrs. Will L. Griffin, Shelby, May 26, as a mark of appreciation for his services. Of the 600 persons in attendance at the reception, it was stated that 500 had been born with the assistance of Dr. Griffin. Infants and grandparents were among the guests.

Upper Peninsula Meeting.—The thirty-seventh annual meeting of the Upper Peninsula Medical Society will be held under the auspices of the Gogebic County Medical Society at Ironwood, August 16-17. The following physicians will participate in the program, among others:

John L. Garvey, Milwaukee, Differential Diagnosis of Common Neurologic Conditions as Met with in General Practice.
Stuart Pritchard, Battle Creek, X-Ray Diagnosis of Chest Lesions.
John S. Lundy and Ralph M. Tovell, Rochester, Minn., Indications and Technic of Blood Transfusions.
Walter A. Fansler. Minneapolis, Injection Treatment of Hemorrhoids.
Bert E. Hempstead, Rochester, Minn., Sinus Infection—Diagnosis and Treatment.
Charles L. Brown, Ann Arbor, Allergy in General Medicine.
Richard M. Hewitt, chief of publications, Mayo Clinic, Rochester, Minn., Art of Writing Medical Papers.

Five minute talks will be given at the evening session, Thursday, by Drs. John J. Walch, Escanaba, president of the society; Frederick C. Warnshuis, Grand Rapids, secretary, Michigan State Medical Society; Clyde C. Slemons, Grand Rapids, state health commissioner, and George L. Le Fevre, Muskegon, president of the state medical society. Dr. James D. Bruce, Ann Arbor, and Governor William Comstock will deliver addresses at this session. Entertainment has also been planned.

MISSISSIPPI

Graduates of Foreign Schools.—In accordance with a resolution adopted by the Mississippi State Board of Health, June 25, only graduates of grade A medical schools of the United States and Canada will be permitted to take the examination for license to practice medicine in the state, and only graduates of grades A and B medical colleges of the United States and Canada will be granted license by reciprocity. The resolution further provides that any graduate of a foreign school making application for license, either by examination or by reciprocity, must show proof from the Council on Medical Education and Hospitals of the American Medical Association that his premedical training and medical education are equivalent to the standards of the Council. Even then, the resolution states, his application may be accepted or rejected by the Mississippi State Board of Health.

MISSOURI

Precautions for Infantile Paralysis Epidemic.—A conference was called by the director of health of Kansas City recently to consider precautions to be taken should infantile paralysis occur in the city. According to the *Jackson County Medical Journal*, all private hospitals are urged to have wards or wings set aside for the care of infantile paralysis patients or suspects. In these wards the precautions to be adopted are those usually followed in typhoid isolation. Infantile paralysis patients admitted to the Kansas City General Hospital in the last five years are being asked if they will be available for supplies of blood. While no serum or blood will be distributed through the general hospital, it will prepare a list of possible donors.

NEW JERSEY

Physician Honored.—Dr. Herbert W. Foster, Montclair, was guest of honor at a dinner, May 23, at the Montclair Golf Club, observing the twenty-fifth anniversary of the founding of the society known as Associated Physicians of Montclair and Vicinity. Dr. Foster was the founder and first president of the society.

Personal.—William L. Sampson, Ch.E., assistant professor of biologic sciences at Rutgers University College of Pharmacy, New Brunswick, has been appointed to the research staff of Merck and Company, Rahway.——Dr. William J. Carrington, Atlantic City, was recently elected president of Kiwanis International.

Society News.—The Society of Surgeons of New Jersey held its spring meeting at Mountainside Hospital, Montclair, May 16. Among others on the program were Drs. Toufick Nicola, Cedar Grove, who conducted an orthopedic clinic; Victor B. Seidler, Montclair, a thyroid clinic; John D. Moore, Bloomfield, a dry clinic on diseases of the eye; Meredith F. Campbell, Montclair, demonstration by roentgen rays of urologic conditions in children. Demonstrations and five minute talks were presented by the obstetric department under the direction of Dr. George B. Verbeck, Caldwell, and various other departments also demonstrated their work. Dr. Walter B. Mount, Montclair, was chairman of the program committee.——Dr. Robert F. Sterner, Cheltenham, Pa., addressed the Gloucester County Medical Society, Pitman, May 17, on disease of the gallbladder.——Dr. James Ewing, New York, addressed the Hudson County Medical Society, Jersey City, May 8, on cancer.——Dr. Frederick T. Van Beuren Jr., New York, addressed the Morris County Medical Society, Greystone Park, May 17, on "Relation of the Hospital to the Public."

NEW YORK

Society News.—Dr. George W. Crile, Cleveland, addressed the Medical Society of the County of Nassau, Mineola, May 29, on "Five Points in Surgery of the Gallbladder and Ducts."

New Board of Health.—A new administration in Buffalo has appointed the following board of health: Drs. Carroll J. Roberts, chairman; Thew Wright, Edward E. Haley, Ambrose A. Maciejewski and August Lascola.

New York City

Tuberculosis Worker Honored.—Two hundred friends of Dr. Dwight Clifford Martin, chief of the tuberculosis bureau of the New York City Department of Health, gave a dinner at the Hotel McAlpin, June 12, celebrating his twentieth anniversary in that position. Speakers who paid tribute to Dr. Martin were Drs. John L. Rice, James Alexander Miller, William H. Park, George G. Ornstein and Herbert R. Edwards. Dr. Robert E. Plunkett, director of the division of tuberculosis, New York State Department of Health, was toastmaster.

Personal.—Dr. G. Canby Robinson, director of the New York Hospital—Cornell Medical College Association, has been granted a year's leave of absence. Dr. Robinson has been in active charge of the building of the new medical center and reorganization of the two institutions during the past six years.——Dr. Walter A. Bastedo received the honorary degree of master of science at the annual commencement of the Philadelphia College of Pharmacy and Science, June 6.——A testimonial dinner was tendered to Dr. Edwin R. Fiske, chairman of the medical board of Kings County Hospital, by the medical staff and alumni of the hospital, April 26. Dr. Fiske has been associated with the hospital for thirty-three years.——Dr. Robert A. Fraser has been appointed chief medical director of the New York Life Insurance Company, to succeed Dr. Ernest H. Lines, who retired after forty-five years of service.——Dr. Horace S. Warner retired July 1 from the position of medical referee for the Aetna Life Insurance Company. He was appointed in 1905.

Group Hospitalization Plan.—The state department of social welfare has approved an application for the establishment of a nonprofit corporation to organize and administer a group hospitalization plan among the voluntary hospitals of New York and its suburbs. The establishment of the corporation, to be known as Associated Hospital Service of New York, now depends on the obtaining of funds to put the plan into operation and maintain it for six months; the payments

of beneficiaries will provide the hospital benefits after that time. Governor Lehman recently approved a bill amending the state insurance law to permit development of this plan, which is sponsored by the United Hospital Fund, comprising fifty-six voluntary hospitals. It is anticipated that about 100 hospitals will participate. The proposed association would be controlled by eleven directors elected annually by a voting membership comprising the presidents of the Hospital Conference of the City of New York, the Brooklyn Hospital Council, the five county medical societies of New York, the Medical Society of the State of New York and the trustees of the United Hospital Fund. The individual cost would be $10 a year and the service would be available only to the insured person, not to his dependents, though dependents may be included later, it is said. The subscriber would be entitled to three weeks of semiprivate hospital care after a ten day waiting period immediately following the signing of the contract (this waiting period would not apply in case of accident) and ten months in obstetric cases. The subscription does not include fees for medical service. Admission to the hospital would be granted only on the recommendation of the subscriber's physician. The new legislation and the development of the group payment plan are the result of a study made by a special committee of the United Hospital Fund, of which Dr. Sigismund S. Goldwater, now city commissioner of hospitals, was chairman.

NORTH CAROLINA

Study of Maternal Mortality.—Adequate prenatal care for expectant mothers was indicated as the principal means by which maternal mortality may be reduced, in a study of 550 deaths attributed to puerperal causes made by the bureau of vital statistics of the state board of health. Inquiries of physicians and midwives brought adequate information concerning 334 deaths. Of 209 white women who died in 1933 from puerperal causes, 187 were attended by physicians. Of forty-four women who consulted a physician before the end of the fourth month of pregnancy, twenty-six sought aid because of alarming symptoms. Among the 125 Negro women who died, only nine went to physicians before the fourth month and seven of those were already ill. Therefore only twenty of the 334 saw a physician early in pregnancy and while still apparently in good health. Of the 334 maternal deaths, 114 were caused by puerperal albuminuria and eclampsia and 24 by other toxemias of pregnancy. Puerperal septicemia caused the second largest number of deaths, 51. According to this evidence it appears that in the vast majority of cases the medical profession has had no opportunity to give protection to mothers, the report concluded. The marked prevalence of toxemias of pregnancy revealed in this study demands an investigation of the cause as well as the prevention and treatment of this condition, it was urged in the report. Conferences of physicians and health officers were held in twelve sections of the state in the course of the study, culminating in a general conference in Raleigh, March 26. All phases of medical care of prospective and actual mothers and of infants were discussed. A committee composed of Drs. Harry H. Johnson, Louisburg, James Street Brewer, Roseboro, Forest M. Houser, Cherryville, and Thomas Leslie Lee, Kinston, drew up a set of minimum standards of prenatal and postnatal care, dissemination of which throughout the state will, it is believed, contribute to the solution of this problem.

OHIO

Personal.—Dr. Henry R. O'Brien, Oberlin, resigned as health commissioner of Lorain County in May.——Dr. James Angus Doull, professor of hygiene and public health, Western Reserve University School of Medicine, Cleveland, has been elected to honorary membership in the Royal Sanitary Institute of Great Britain.——Dr. Charles R. Pontius, Fremont, was guest of honor at a dinner given by the Sandusky County Medical Society at DeMars Point Club, June 19, in celebration of the fiftieth anniversary of his medical practice. Dr. Charles J. Wehr, Bellevue, secretary of the society, was toastmaster and the speakers were Dr. Norris W. Gillette, Toledo, and George B. Smith, D.D.S., Fremont. Dr. Pontius reviewed changes in medical practice during the past fifty years.

Dr. Bachmeyer Honored.—At the annual reunion of the Alumni Association of the University of Cincinnati College of Medicine, June 14, tribute was paid to Dr. Arthur C. Bachmeyer, who has resigned as dean of the college. Dr. Martin H. Fischer presented a silver coffee service to Dr. Bachmeyer on behalf of his colleagues at the college and the Cincinnati General Hospital. Other speakers of the evening were President Raymond Walters of the university. Drs. William M. Doughty and Fred Heinold and the guest speaker, Dr. David Riesman, Philadelphia, who discussed "Medical Progress in One Generation." Dr. Ben L. Bryant was elected president of the association.

OKLAHOMA

Society News.—The Muskogee County Medical Society held a joint meeting with the society of Sebastian County, Ark., in Muskogee in May. Speakers were the following Fort Smith physicians: Drs. Curtis H. Kennedy, "The Decline of Prescription Writing"; Clarence B. Billingsley, "Management of Labor," and Davis W. Goldstein, "Unusual Malignancies About the Face."——Drs. John L. Day and Carl T. Steen of the Central Oklahoma State Hospital, Norman, addressed the Comanche County Medical Society, Lawton, May 10, on mental hygiene and manic depressive psychosis, respectively.——The Stephens County Medical Society sponsored a public meeting on cancer in Duncan, May 29; speakers were Drs. Everett S. Lain and Wendell M. Long, Oklahoma City.

PENNSYLVANIA

Hospital News.—The ex-residents' society of the Abington Memorial Hospital, Abington, held its second annual meeting, June 28. The day was devoted to medical and surgical clinics, followed by a banquet in the evening. Dr. Paul M. Kistler, Wayne, is secretary of the society.

Society News.—The Pittsburgh Medical Forum held the first of a series of symposiums on medical economics, June 21. Speakers were Drs. Samuel B. Goodstone, on "Voluntary Health Insurance"; Louis Lasday, "Compulsory Health Insurance" and Henry M. Snitzer, "Dispensary Practice as It Affects Medical Economics."——Dr. Pascal Brooke Bland, Philadelphia, was guest speaker at a meeting of the eleventh councilor district of the Medical Society of Pennsylvania at the Summit Hotel, near Uniontown, July 12, on "Intracranial Injuries of the New-Born from the Standpoint of the General Practitioner." Dr. Moses Behrend, president-elect of the state medical society, discussed workmen's compensation.——Speakers before the Fayette County Medical Society, Uniontown, June 7, were Drs. James E. Van Gilder, on pernicious anemia; Arthur E. Crow, appendicitis, and Robert H. Jeffrey, inguinal hernia.——Dr. Roy R. Snowden, Pittsburgh, addressed the Cambria County Medical Society, Johnstown, July 13, on "Newer Conceptions of Hypertension and Nephritis." Dr. Herbert P. Leopold, Philadelphia, addressed the society, June 21, on "Acute Appendicitis—Its Surgical Significance and Mortality."——Drs. William V. Mullin, Cleveland, and Thomas B. Holloway, Philadelphia, addressed the Western Pennsylvania Eye, Ear, Nose and Throat Society, May 17, on "Influence of Allergy on Rhinology" and "Ocular Manifestations of Certain Intracranial Basal Lesions," respectively.

TEXAS

Special Society Elections.—Drs. Ramsey H. Moore, Dallas, and Frank H. Lancaster, Houston, were elected president and secretary, respectively, of the Texas Pediatric Society at the annual meeting in San Antonio, May 16. At the meeting of the Texas Neurological Society, May 14, Drs. Guy F. Witt, Dallas, and Wilmer L. Allison, Fort Worth, were elected president and secretary, respectively. New officers of the Texas Dermatological Society, elected at the annual meeting, May 14, were Drs. Cornelius F. Lehman, San Antonio, president, and Everett R. Seale, Houston, secretary. Dr. Everett F. Jones, Wichita Falls, was elected president of the Texas Railway Surgeons' Association at the annual meeting, May 14, and Dr. Ross B. Trigg, Fort Worth, secretary.

VIRGINIA

Site of Civil War Hospital Marked.—A bronze tablet was placed on a worn boulder on Chimborazo Hill in Richmond, May 26, marking the site of Chimborazo Hospital, said to have been the largest military hospital in the world during the Civil War. It consisted of 150 wooden buildings and cared for a total of 76,000 patients during the war. The commandant of the hospital was Dr. James B. McCaw, father of Brig. Gen. Walter D. McCaw, for many years librarian of the Army Medical Library at Washington, D. C. Dr. Edgar Erskine Hume, present librarian, was to have delivered the address of the occasion on the history of the hospital. Dr. Hume was unable to attend, but his address was read by Dr. Greer Baughman, Richmond, and the tablet was unveiled by Mrs. Dabney H. Maury, a daughter of Dr. James B. McCaw. The memorial was placed by the Confederate Memorial Literary Society.

Society News.—Dr. Frank P. Coleman, Stuarts Draft, addressed the quarterly meeting of the Augusta County Medi-

cal Association, Staunton, May 2, on treatment of internal hemorrhoids by injection.——Drs. John M. T. Finney and Thomas R. Boggs, among others, addressed the Fredericksburg Medical Society, May 29, on acute conditions in the abdomen and fungous infections of the tongue, respectively. At this meeting the society had as guests members of the Piedmont, Loudon and Fauquier county medical societies, the Northern Neck Medical Society, medical officers stationed at Quantico and Dahlgren and at the Civilian Conservation Corps camps at Bloody Angle, Wilderness and Chancellorsville.——Drs. John A. C. Colston, Baltimore, and Samuel F. Driver, Troutville, addressed the Roanoke Academy of Medicine, May 7, on "Serum Treatment of Tularemia" and "Urologic Problems of Childhood," respectively.——Dr. Thomas P. Sprunt, Baltimore, addressed the Lynchburg Academy of Medicine, June 4, on "Treatment of Common Types of Arthritis."

WASHINGTON

Society News.—Dr. Ira R. Watkins, Aberdeen, addressed the Grays Harbor County Medical Society, May 16, on fractures.——Dr. Arthur C. Jones, Portland, presented a paper on "The Physiologic Basis of Physical Therapy" at a meeting of the Pierce County Medical Society, Tacoma, May 22.——Drs. Otis F. Lamson, Seattle, and Souren H. Tashjian, Seattle, addressed the Yakima County Medical Society, Yakima, May 14, on intrathoracic goiter and treatment of infections by nutrient broth, respectively.——Speakers at a meeting of the Walla Walla Valley Medical Society, Walla Walla, May 10, were Drs. Joseph P. Brennan and Donald Wair, Pendleton, on "Treatment of Tetanus" and "Toxic Psychosis in Use of Sedatives," respectively; and Drs. Pius A. Rohrer and Hale A. Haven, Seattle, "Transurethral Resection" and "Neurologic and Surgical Aspects of Injuries to the Spine," respectively.

GENERAL

Society News.—Dr. Henry Kennon Dunham, Cincinnati, was elected president of the National Tuberculosis Association at its recent annual meeting, and Dr. Charles J. Hatfield, Philadelphia, was reelected secretary. The next annual session will be held at Saranac Lake, N. Y.

Automobile Fatalities Increase.—The bureau of the census, U. S. Department of Commerce, announced that eighty-six large cities in the United States reported 607 deaths from automobile accidents for the four weeks ended July 7, as compared with 570 for the four weeks ended July 8, 1933. Of the total number 498 occurred within the corporate limits of cities. For the fifty-two week periods ended July 7, 1934, and July 8, 1933, the totals for all the cities were 8,697 and 7,794, which indicate a recent rate of 23.3 per hundred thousand of population as against an earlier rate of 20.9.

Examinations in Dermatology and Syphilology.—The American Board of Dermatology and Syphilology will hold examinations at the annual meeting of the Southern Medical Association in San Antonio, November 13-16, if there are enough applications to warrant the trip. The written examination for group B applicants will be held in centers throughout the country, October 1, and the oral examinations in group A and group B at San Antonio. Applications should be filed in the office of the secretary, Dr. Clarence Guy Lane, 416 Marlborough, Boston, before August 20. Application blanks and other information should be obtained from Dr. Lane.

Physicians Named to U. S. Science Advisory Board.—New appointments to the U. S. Science Advisory Board include those of Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research, New York; Dr. Milton J. Rosenau, Boston, Charles Wilder professor of preventive medicine and hygiene, Harvard School of Public Health, and Dr. Thomas Parran Jr., Albany, health commissioner of the state of New York. Frank R. Lillie, Ph.D., professor of zoology and dean of the division of biological sciences, University of Chicago, was also among those named to the board. The Science Advisory Board was created by President Roosevelt, July 31, 1933, to aid him and his department heads in the conduct of research in the federal government. The board now has fifteen members.

CORRECTION

Staff of Bronx Hospital.—In a recent article published in the department of THE JOURNAL devoted to the Council on Physical Therapy, it was stated that Dr. Luttinger was a member of the staff of the Bronx Hospital, New York. The superintendent of that hospital writes to say that Dr. Luttinger is not connected with that hospital.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 30, 1934.

The Tax on Cod Liver Oil

It was reported previously (THE JOURNAL, Oct. 8, 1932, p. 1275) that one result of the Ottawa conference was increased duties on foreign imports of certain drugs, notably cod liver oil, honey and linseed. What was said in the markets about honey and linseed, according to the *Lancet*, was "hardly audible above the noise made about the increase of duty on foreign cod liver oil." This was done to please Newfoundland and applied mainly to Norwegian cod liver oil. It was pointed out at the time that nearly all the Newfoundland cod liver oil was consumed in the United States and that Britain depended on Norway for the main supply. The increased price brought about by the duty would enable Newfoundland to send her oil across the Atlantic and get more for it. The diminished supply for the United States would also increase the price there and enable Norway to send its oil, excluded from Britain, across the Atlantic. Thus the fundamental flaw of protection—the turning of industry from natural into artificial channels—is demonstrated in the result: dearer oil for everybody and two unnecessary journeys across the Atlantic.

Another evil of the mistaken Ottawa policy is now shown in a letter to the *Times* from an exporter of cod liver oil, who points out that the duty on cod liver oil was intended primarily to assist the sale of the Newfoundland oil. But there is considerable trade done in importing the Norwegian oil in bulk and reexporting it in bottles to the Far East. The margin of profit in this trade is small, but its importance lies in the fact that many general orders from wholesale dealers in the drug trade include cod liver oil, and if the oil cannot be obtained from the English dealers at competitive prices the general order goes elsewhere. The duty of 32 cents per gallon on the oil makes it impossible to compete with other nations. This exporter has been forced to raise the price. In spite of an advertising campaign abroad, where his brand of oil is well known, his sales have gone rapidly down. This has been accompanied by a loss of general business, though exceptional efforts were made to retain it. Employment suffers accordingly and British ships lose freight. Perhaps, as in the case of the insulin tax, our protectionist government will give way after doing much mischief.

Making Motor Cars Less Noisy

The efforts to mitigate the noise evil have been described in previous letters. In the *Times*, Lord Horder, chairman of the committee of the Anti-Noise League, calls attention to an amendment to the road traffic bill, which is strongly supported by the league. Under the road traffic act of 1930, the minister of transport made a regulation that every vehicle propelled by internal combustion engine should have a silencer for reducing the noise of the exhaust. But this regulation is ignored by the manufacturers of many motorcycles and some of the most popular sports cars. One of the manufacturers of silencers publicly admitted that he supplies "partial silencers" not because of any difficulty, mechanical or economic, in supplying efficient ones, but because purchasers demand unnecessary noise. They cannot be punished for doing so, as the liability for noncompliance with the regulation arises only in those using the road. As to these, experience has shown that magistrates are unwilling to punish those who merely use the vehicle as sold to them. The proposed amendment will make it unlawful to sell a vehicle of which the use on the road would be unlawful. When the amendment was moved in the house of commons, the

government, while expressing sympathy with its object, was unable to accept it, as its enforcement was considered practically impossible. But the government stated that it is consulting the department of scientific research and the National Physical Laboratory and asking them to look into the scientific aspect of the silencing of automobiles to see whether it would not be possible to make a regulation dealing with the user that would be more precise and easier to apply. Voluntary cooperation is also being sought with the automobile manufacturers. The amendment was withdrawn.

The Prevention of Tuberculosis

The twentieth annual conference of the Society for the Prevention of Tuberculosis was held in London under the chairmanship of Sir Robert Philip. Sir Hilton Young, minister of health, paid a tribute to the work of the association since its inauguration in 1898 in instructing the public. Lord Astor, chairman of the departmental committee on tuberculosis, whose recommendations for the control of the disease, made twenty-one years ago, were the basis of subsequent progress, said that the outbreak of the war prevented them from coming into effect until 1919. Some of the decline in the tuberculosis of children he attributed to dealing with the problem of tuberculous milk.

Dr. A. S. Macnalty, senior medical officer to the Ministry of Health, said that the chief problem in the past had been residential institutional accommodation but that now it was instruction of the public in the early symptoms of tuberculosis. The state had realized the factors favoring the disease, such as certain occupations, malnutrition, overcrowding and bad sanitation. Antituberculous work was now an integral part of public health, and the health officer could coordinate all the branches of prevention. More attention need to be paid to the examination of contacts and the provision of adequate after-care for arrested cases, with special reference to home surroundings and occupation.

Dr. N. D. Bardswell, principal assistant medical officer to the London County Council, reviewed the progress made in London, where there is a central authority that provides residential treatment and thirty-five dispensaries linked up with the neighboring hospitals. A decline of nearly 40 per cent in pulmonary tuberculosis and over 75 per cent in nonpulmonary tuberculosis in twenty-one years had resulted. Although other factors were concerned and the falling incidence had been in progress since 1875, he felt that the work in prevention had materially contributed. The popularity of tuberculin treatment had gradually faded away and today was not seriously considered as a cure. Children living in conditions of danger of infection, or those who would be left unattended if the woman of the household went away for treatment, were boarded out.

THE TUBERCULOSIS DISPENSARY

Dr. G. Lissant Cox, central tuberculosis officer for Lancashire, said that the dispensary unit should work in unison with the institutional unit and that lack of this unity was the cause of much ineffective work. The tuberculosis officer should be at the same time a medical superintendent, visiting or resident, and the medical superintendent should be in part a tuberculosis dispensary officer. Dispensary units had been much too small; they should serve a population of 200,000 in a rural and 300,000 in an urban district. In the discussion it was suggested that dispensaries should be attached to the teaching and public assistance hospitals, and that tuberculosis officers should look forward to clinical rather than to administrative preferment.

RESIDENTIAL INSTITUTIONS

Dr. James Watt, medical superintendent of King George V Sanatorium, pointed out the great change brought about in residential institutions by radiography and collapse therapy, thoracoscopy and the electrical cutting of adhesions. The sanatorium no longer resembled a convalescent home but a hospital.

Dr. J. B. McDougall, medical director of British Legion Village, said that too much attention had been paid to the medical aspects of tuberculosis and too little to the economic. After-care committees failed for lack of financial support. The village settlement, as exemplified at Papworth, sold annually about $1,000,000 of goods to the public, and $250,000 was paid in wages to ex-patients. This might be regarded as ideal, but local authorities were deterred by financial considerations from establishing them. In the village settlement the family as a whole was cared for as carefully as the patient.

AFTER-CARE

Miss Edith McGaw, honorary secretary to the Paddington Tuberculosis Dispensary, insisted that the care committee was an integral part of the tuberculosis dispensary. Yet there were only 150 care committees to the 750 dispensaries in the country. Tuberculosis was a many sided social problem as well as a medical one. The family, not the individual patient, was the unit. The rehabilitation of the patient's home was as essential as the treatment of its members. The members of care committees could give help in the homes by instruction in cooking, advice regarding the amount of clothing desirable, and other matters. Assistance was often needed as regards home work, and handicraft classes should be encouraged.

The Sterilization of Mental Defectives

The Mental Hospitals Committee of the London County Council has decided by a majority to recommend that mental defectives be permitted to offer themselves voluntarily for sterilization. The decision followed consideration of a recommendation of the Ministry of Health to the committee. It is understood that sterilization is to be applied only to patients who are likely again to be able to take their places in the community after leaving institutions and to transmit their defects. The vote was 23 to 11. For the first time since the socialists have obtained control of the London County Council, the party whips were taken off and so the vote was a free one.

PARIS

(From Our Regular Correspondent)

June 6, 1934.

Dangers of Barbituric Acid Derivatives

Injections of strychnine to combat the toxic effects of barbituric acid derivatives, according to the Idd method, are accepted today in France as the only remedy offering any chances of success. The conclusion has been reached that there is a pharmacodynamic antagonism between strychnine and the barbiturates. Carrière, Huriez and Villoquet have experimented on animals, examining the lesions found at necropsies, and have raised a protest against the commonly accepted view. In experimental animals they discovered grave lesions of the kidney, the liver, the lung and the nerve centers, which no medicinal action eliminated. Carrière does not think there is an antagonism between strychnine and the barbiturates. On the contrary, he found that poisonings due to the two substances may be superimposed, each of the substances exerting totally different effects on the nervous system. Furthermore, the good results ascribed to the Idd method are far from constant. There are a number of failures, which are not due solely to the dose of ingested toxin but partly to the peculiar predisposition of the subject. In case of suicide due to an overdose, the subject, though often an addict to barbiturates, may develop hepatic lesions that lower resistance and which strychnine will not overcome. In cases in which strychnine has given good results, it is never the only remedy

used; often the practitioner resorts to venesection, injections of serum with dextrose, epinephrine, camphorated oil and inhalations of oxygen. Carrière states that one may use strychnine, since no remedy should be neglected in the presence of the danger of death, but it should not be relied on or be the sole remedy. The practitioner must use conjointly all other remedies and not be surprised if they fail, especially if he is dealing with persons addicted to barbiturates. In operating on animals, Carrière secured excellent results with intravenous injections of coramin and a 30 per cent solution of alcohol. He recommends applying this remedy to man.

The General Association of Physicians of France

The Association générale des médecine de France, which is not concerned with scientific questions but rather with professional problems and the providing of mutual aid for physicians, held recently its seventy-second general assembly. The association has vast resources derived from numerous bequests of benefactors. It provides places of retirement for its aged members no longer able to practice their profession, and aid for physicians who are bereft of resources (or cares for their widows), even though they are not subscribing members of the association. The general secretary, Dr. Lutaud, announced that the association is prosperous. He described the services that it renders and emphasized the value of preserving close relations with the medical syndicates. Formerly there was a feeling of rivalry between the association and the syndicates; but today the relations are cordial. The association has relinquished to the medical syndicates, whose meetings are more frequent, many questions that formerly overloaded its program and which it was not in as good a position to solve as were the syndicates. The secretary, in concluding his remarks, advised all physicians of France to be loyal to both the association and the local syndicates. The assembly adopted a resolution in favor of suppressing the special tax termed "patente," imposed on certain liberal professions (physicians and lawyers) and which, proportioned according to the amount of house rent paid by the taxpayer, without taking account of the relative family expenses, rests heavily on the profession. The assembly rejected the proposal of Perrin of Nancy, who suggested that this tax (patente) be applied also to physicians who are not engaged in actual practice but who occupy posts as directors of sanatoriums and various institutions and are now exempted.

The Forty-Seventh Congress of Ophthalmology

The Congrès ophthalmologie de Paris, always well attended, was the occasion for presenting a wide range of topics, which give a survey of the present status of ophthalmology. In addition, a single main topic was treated in a paper presented by Cherod and Nataf of Tunis on "Biopsy of the Normal and Pathologic Conjunctiva." Examination with the slit lamp facilitates the study of microscopic phenomena in living subjects. In this manner one may study the mechanism of the formation of lesions of the cornea, iris and crystalline lens, and even of the vitreous body, the reactions of the tissues, the effects of traumatism and infection, and the development of local vascularization and lymphoid elements. The authors think that this marks a new era in knowledge of the mechanism of various lesions of the eye. In addition, Mr. Kalt of Paris described his operative procedure for senile cataract. He extracts the cataract within its capsule. Mr. Terson of Paris discussed hypertension in glaucoma. Mr. Lacat emphasized the inefficiency of iridectomy in the glaucomatous manifestations of certain forms of choroiditis. Mr. Trantas of Athens called attention to the high frequency of glaucoma in Greece and in Turkey. Jandelize, Baudelot and Gauzt (Nancy) have treated retinal detachment, without visible laceration, by diathermocoagulation. Mr. Genet of Lyons reported the results of diathermic applications to retinal cicatrices following detachment. Mr. Magitot of Paris called attention to the amelioration secured by means of pericarotid sympathectomy in certain degenerative lesions of the retina and the optic nerve. Mr. Bailliart described the rôle of vascular spasms in diseases of the eye. Mr. Villard of Montpellier discussed the eye dangers peculiar to each type of sport. Among other foreign speakers were Arruga of Barcelona, Poyales and Moreno of Madrid, Amat of Madrid, Marquez of Madrid, Gouin of Lausanne, Fritz of Mons, Borel of Neufchâtel, François of Charleroi, Kapuscinski of Posnan, and Van der Stacten and Appermans of Louvain.

The Institute of Legal Medicine at Lille

At Lille the opening of the new institute of legal medicine, recently erected, was the occasion of a congress presided over by Professor Leclercq, director of the institute, which was largely attended by medicolegalists of the north of France and by delegations of specialists from Paris and foreign countries: Balthazard, Guibert and Piedelièvre of Paris, Firket of Liége, Zangger of Zurich, Tullio and Salvatore Diez of Rome, Lattes of Pavia, Georgiades of Athens, Ribero and Ciala of Rio de Janeiro, Stanesco of Bucharest, and Amot and Vervaeck of Brussels. The arrangements and equipment of the institute enable investigators to devote themselves not only to traditional legal medicine but also to its newer branches: criminal anthropology, research on penitentiaries, occupational medicine, and psychopathologic examinations of delinquents. The institute will serve not only as a research center but also as a school for the training of medicolegalists. In the opening address, Professor Leclercq stressed the evolution of legal medicine and the importance of psychophysiologic examination of delinquents. Papers were presented on the contradictory results of expert mental examinations, on social defense and on criminal prophylaxis, and the like, by Professors Raviart and Vullian of Lillie, Professor di Tullio of Rome (a pupil of Lombroso), Professor Balthazard of Paris, and Professor Vervaeck of Brussels.

BERLIN

(From Our Regular Correspondent)

June 4, 1934.

Meeting of the German Roentgen Society

The Deutsche Röntgengesellschaft has been reorganized in accordance with the "leader" principle. The new director is Frik of Berlin. At a session of the society in Baden-Baden, April 14-15, Forssell of Stockholm presented a paper on "The Motor Mechanism of the Gastric Mucosa." He explained his basis for the theory he advanced eleven years ago to the effect that the surface of the gastric mucosa is characterized by changeable features and is formed by the muscularis mucosae (under the influence of the autonomic nervous system). He presented new evidence in support of his belief. The gastric mucosa forms channels and digestive nooks, in which solid pieces of food are retained. The vessels of the mucosa may become distended but cannot form rugae.

In an address "The Real and the Apparent in Roentgenograms," H. Franke of Berlin discussed the many deceptions that may arise in the interpretation of roentgenograms, through technical and physical errors, faulty delineation, shadows, errors of amplifying screens and the treatment of films, and also through optical illusions, quite apart from the erroneous interpretations due to lack of experience and critical judgment. He emphasized that there is no common agreement as to what roentgen apparatus and tubes are best for certain purposes.

A number of papers dealt with roentgen kymography, which is superior to kinematography. It enables the examiner to obtain a graphic registration of motions and their course in

point of time. In the heart, synchronous registrations of the arterial pulse, the apical beat and the heart margin pulsations, together with a time analysis of the heart cycle, may be made. By means of kymography, the value of which was emphasized by the papers of Stumpf and Bickenbach of Munich, the cardiac apex is more easily located in connection with heart measurement; likewise the dividing line between the left ventricle and the left auricle and pulmonary arteries. Kymography aids also in the diagnosis of aortic defects; likewise in the differential diagnosis between aneurysm and tumor. The method is useful in dealing with the kidneys, ureters and stomach; it likewise gives information on the position and extent of adhesions and contraction of lungs in connection with collapse treatment of pulmonary tuberculosis; also in cardiac infarct.

A paper was presented by Fichera of Milan on his method of biologic treatment of cancer, which is the result of years of study on the biology of cancer in connection with clinical observations. The fact that many organs seldom develop cancer metastases, that their absence furthers the growth of tumors and that their implantation checks such growth was utilized. Logical application of such biologic observations, together with carefully planned imitation of natural defense processes, led to the injection of corresponding organ extracts, with the result that, of 100 inoperable tumors, 9 per cent retrogressed entirely and 8 per cent partially. By simultaneous application of radiologic therapy the effects are improved, since the action of the two different agents on the tumor tissue has much in common. By means of microscopic sections, Fichera showed the retrogression in the tumors during the treatment. During the discussion various opinions were expressed, and some were not favorable. In any event, more observations should be made.

Other papers dealt with the cancer problem, partly with statistics and partly with the results of irradiation in carcinomas of various organs. Technical questions were considered and observations in several cases were reported. The outcome of short wave therapy in a number of cases was announced. In contrast with former conditions, new apparatus has achieved good results even in inflammatory gynecologic disorders. Specific effects of short waves in the treatment of malignant tumors were denied and such apparent effects were explained as due to the action of heat.

The Effects of Nicotine

In connection with the success of the Deutsches Tabakforschungsinstitut in Forchheim, with the cultivation of tobacco plants with a reduced nicotine content, it is time for the medical profession to raise the question as to whether nicotine should not be renounced in the interest of public health. Dr. Stroomann discussed these questions before the medical society of Frankfort-on-Main. Nicotine is a poison, which, acting on the vegetative nervous system, exerts an irritative and also stimulative effect before it paralyzes. If the right kind of tobacco is selected and the method of smoking is correct (no inhaling, observance of proper intervals, discarding of the stump, in which a 11-13 per cent enrichment occurs), the stimulative effects of nicotine will usually predominate over the narcotic effects; for example, smoking often promotes digestion; through the excretion of epinephrine it may possibly have a stimulative influence on the circulation; through its psychic influence it may affect work output, concentration, mood and fatigue. The abstinence manifestations (languor, irritability, restlessness, headache, indigestion) are usually of a moderate type; genuine addiction is extremely rare. That smoking is habit forming has not been proved by animal experimentation, although it has been shown to be probable. In the detoxication process the liver plays a special part. Of the injuries resulting from immoderate and improper smoking, cardiac and vascular disorders are important. Severe damage to the coronary vessels, which occurs clinically in about 28 per cent of smokers, has received a satisfactory explanation through Professor Rein of Göttingen. In the dog, nicotine produces an unequivocal marked vasoconstriction of the coronary vessels. Heavy doses occasion the well known increase of blood pressure, with simultaneous increase of the heart beat. That signifies, however, stimulation of the heart to make undue efforts, while, at the same time, the coronary arteries are suppressed—a catastrophe. Coronary infarct of purely vasomotor origin is assumed. In association with nicotine gangrene in a juvenile smoker, he found a certain constitutional narrowing and thinness in the walls of the vessels. A sure explanation of the predominant injury of vessels of the extremities and the viscera cannot be given as yet. In any event, importance attaches to the condition of the corresponding sympathetic ganglions. Spastic injury over a long period, due to nicotine, may prepare the way for later anatomic narrowing of the vessels. Increase of blood pressure in man as a result of nicotine must not be overemphasized. The transitory increase of pressure due to excretion of epinephrine as a result of nicotine must be regarded as more important. Frequent occurrence of bronchial carcinoma in smokers appears possible. Gastritis with superacidity and supersecretion is frequent in association with acute abuse of smoking; in chronic abuse of tobacco, anacidity occurs. Cases of ulcers in juvenile smokers appear to be assured. The increase of blood sugar resulting from nicotine in diabetic persons is so slight that it has no practical value. Increase of basal metabolism through action on the thyroid is assumed clinically. The enjoyment of smoking lies chiefly in the taste and secondarily in the odor; the influence of ocular perception is overestimated. Acute poisonings due to nicotine have increased in recent years, since high concentrates of nicotine can be bought as insecticide, without a "poison" label.

Nutritional Treatment of Diabetes Mellitus

According to Naunyn and others, the principal task in the dietetic treatment of diabetes mellitus lay in a restriction of the carbohydrates and proteins, with occasionally generous additions of fat. Stolte, however, gives diabetic children carbohydrates up to normal requirements, comparatively little fat and an average quantity of proteins, but at the same time, insulin until aglycosuria is established. A similar procedure in dealing with adult diabetic patients, as W. Ercklentz of Breslau now reports, showed the favorable effects of this diet. The notable increase in the carbohydrates requires no proportionate increase of insulin; for example, patients who, with 50 Gm. of carbohydrates, required 70 units of insulin, needed only 120 units when the carbohydrate was increased to 500 Gm. Thus far the following results have been attained: The sharp increase of carbohydrates is highly appreciated by the patient and is well borne; the rise in the blood sugar is balanced by an increase of insulin. The amount of insulin required for the elaboration of the increased quantity of carbohydrates is much less than would be expected from the amount of insulin required with the ingestion of the smaller quantities of carbohydrates. Following a prolonged administration of large quantities of carbohydrates, a gradual improvement in the state of metabolism becomes evident, which enables the practitioner to reduce materially the insulin dosage and occasionally to omit it entirely for a time.

Deaths in the Early Morning Hours

The observation that a high percentage of moribund persons die during the early morning hours has been inquired into by Dr. Jusatz and Dr. Eckhardt, of the hygienic institute at the University of Marburg, and the results of their inquiry were reported recently in the *Münchener medizinische Nachrichten*. A comparison was made between 3,294 deaths occurring during

the past six years in Marburg, on the one hand, and 3,769 deaths from Rostock and 1,444 deaths from Kovno (Lithuania). Suicides and deaths due to accident were not considered. In all the statistics there was a general agreement that the greatest number of deaths occurred in the early morning hours, while the smallest number at night is around midnight. The same course of events occurred ninety years ago. The smallest number of deaths during the twenty-four hours occurs at noon —in Rostock around 11 o'clock. In the afternoon there is considerable variation in the curves. An explanation of the connection between the daily course of mortality and physically measurable periods of time would be of great biologic interest. It may be noted with reference to the daily fluctuations of electrical conductivity that the maximums lie between 4 and 5 o'clock in the morning and the minimums in the midday hours.

A New Outbreak of Psittacosis

In the *Reichsgesundheitsblatt*, Prof. J. Fortner and R. Pfaffenberg report from the Institut für Infektionskrankheiten "Robert Koch," Berlin, a new outbreak of psittacosis. Since the beginning of 1934, Germany has had a recrudescence of cases of psittacosis in man. According to reports sent to the Robert Koch institute there have been seventeen familial outbreaks so far this year, fourteen of which were in Berlin. The total number of cases is forty-two, ten of which were fatal. In seventeen instances, investigators found the causative agent in parrots that had recently been furnished by bird dealers. The birds that carried the virus were all apparently well except one.

ITALY

(From Our Regular Correspondent)

May 15, 1934.

The Blood Sugar Curve in Mental Diseases

Dr. Telatin has made a comparative study of the blood sugar and of the sugar of the spinal fluid, following the administration of 1 mg. of epinephrine, in mental patients. Discussing before the Accademia delle scienze mediche e naturali di Ferrara his results, the author, who made use of the Folin-Wu procedure, called attention to a characteristic spinal fluid sugar curve of dementia praecox. An ascending curve was observed in all patients studied. In epileptic patients the curve is almost constantly ascendent and without interruptions. In dementia praecox patients, however, Telatin found constantly a negative curve, and as the blood sugar was increased the spinal fluid sugar was lowered, the lowest value being observed at the moment when the blood sugar reached its highest point. From that moment the spinal fluid sugar increased slowly, until it reached and exceeded the index that it presented at the beginning of the test.

The Academy of Medicine of Turin

The recent session of the Accademia di medicina di Torino opened with Professor Tirelli in the chair. Angioleri recalled the various forms of constitutional and hereditary hemorrhagic diathesis and described the fundamental characteristics of Osler's disease, or familial hemorrhagic angiomatosis. These characteristics consist in the transmission of the morbid syndrome as the expression of a dominant character, in the appearance of mucous and cutaneous hemorrhages, or in the presence on the skin or on the mucosae of smooth angiomas of various size. At the base of the symptomatology lie certain lesions of the connective tissue and of the mesenchymal apparatus of the skin. Also the blood vessels appear changed—so much so as sometimes to appear constituted solely of endothelium, which is supported by tissue of normal quality. The etiology of this rare form of familial hemorrhagic diathesis is unknown, and the treatment is symptomatic.

Piolti described the results of the administration of arsphenamines in large doses to persons overnourished with carbohydrates and subjected to the action of insulin. This method produces a notable increase in the tolerance of the organism for arsenical therapy. The speaker interprets the action of the insulin, and of many other substances that serve the same purpose, as an action designed to save the protein substances of the liver, on which devolves the normal antitoxic function.

Bobbio reported the results of researches on the permeability of the lymph glands invaded by tuberculosis. As a result of a tuberculous invasion, one observes in the lymph glands changes in the lymphatic circulation, and the persistence of a certain degree of permeability is demonstrated by the absorption of india ink injected into adjacent areas. The entity of the lymphatic current is diminished in relation to the diminution of the functioning lymphatic tissue, and the velocity of the current is diminished by the obstruction occasioned by the discontinuity that is created in the lymph paths through the irregular invasion by the tuberculous process.

Battistini and Herlitzka announced the results of studies on the behavior of the blood sugar and the urinary sugar following subcutaneous injections of phlorhizin, whether with a burdening test or otherwise. In healthy persons they always found that the urinary sugar varied within wide limits and independent of the blood sugar values, which shows that phlorhizin induces a notable increase in the difference between the capillary and the venous values. This leads to the supposition that phlorhizin increases the fixation potency of the peripheral tissues through the dextrose.

Recent Developments in the Anemias

Dr. Di Guglielmo presented recently before the Società medico-chirurgica di Catania a communication on the anemias. Since the almost complete disappearance of chlorosis, there remain in the large group of anemias only two types that are not secondary: pernicious anemia and essential hypochromic anemia. The last mentioned type, which has been known only a few years, is characterized by hypochromia, microcytosis and gastric achylia or anachlorhydria. Pernicious anemia and essential hypochromic anemia, while entirely different from the hematologic point of view, have gastric achylia in common, which, however, is to be regarded as also of a different nature, for the action directed against pernicious anemia, which is secured with meat predigested in vitro by the gastric juice of a patient with essential hypochromic anemia, is completely lacking when one uses the gastric juice of a patient with pernicious anemia. Hence, in the present state of knowledge of the subject it can only be stated that the two morbid processes belong to the group of achylic anemias, which must be studied now more profoundly.

Essential hypochromic anemia, in contradistinction to the pernicious type, is not affected by the action of liver preparations, although it may be cured by the use of iron in heavy doses orally.

Use of Therapeutic Products

The Public Health Service recently sent a circular letter to the prefects establishing rules governing the application to man of new therapeutic products not yet offered for sale on the public market. Heretofore it has been held by many that such application might be made, provided it was done by a physician, on his own responsibility. According to the new rulings, the prohibition of sale to the public of medicines and preparations to which are attributed specific curative and prophylactic properties presupposes also the prohibition of free application to man until there has been secured the registration prescribed by the regulations pertaining to serums, vaccines and medicinal specialties, and until the formula and the mode of employment

have been announced and approved. Authorization is to be intrusted to the minister of the interior. When it is a question of remedies or treatments that are to be kept secret, the authorization is dependent on the conditions that the application be gratuitous, be effected in public institutions on the written consent of the patient, and that a report be sent to the provincial health officer on the results secured.

The circular letter contained also regulations concerning the advertising of remedies for the prevention and treatment of disease. The insertion in newspapers of notices or correspondence referring to special procedures for the prompt and radical treatment of malignant tumors, tuberculosis, venereal infections and all those diseases for which no quick cure has as yet been discovered is prohibited. The proper place for scientific communications of this type is the medical congress and the medical journals.

Pathology of the Intervertebral Disks

A recent meeting of the Società Piemontese di chirugia was devoted entirely to the pathologic aspects of the intervertebral disks.

Camera took up the question of the pathogenesis of the symptom complex. According to the speaker, so-called kyphosis of adolescents should be regarded as an epiphyseal dystrophia. The calcification of the nucleus pulposus is not to be regarded as a pathogenetic peculiarity but must be considered as an expression of a local, changed calcium metabolism due to the existence of an involvement of the disks.

Dogliotti reported his observations on 120 cases of spinal algias. Teneff reported his observations in cases in which there were lesions on an intervertebral disk between the fourth and fifth lumbar vertebrae and between the fifth vertebra and the sacrum, in which there was a frank monolateral peripheral sciatic symptomatology of funicular origin but without any symptoms of lumbo-arthritis. He believes that in such cases the pathogenesis of the ischialgia is in mechanical, circulatory or inflammatory changes in the intervertebral foramina following changes in the intervertebral disks.

The same speaker, on examination of 600 roentgenograms of the spinal columns of patients who presented an intervertebral pain symptomatology, found a case of hernia intraspongiosa of the disk.

A case of lesions of the intervertebral disk due to gonococcic infection was described by Lucca. Foà observed in a woman aged 73 a lesion that he regarded as a calcified hernia of the body of a vertebra.

Marriages

ARCHIBALD CORY RANDOLPH to Mrs. Rebecca Dulaney McElhone, both of Upperville, Va., June 2.

JEROME J. BREDALL, Perryville, Mo., to Miss Mary Katherine Lacey of St. Louis, June 30.

EDWIN JAMES RENNELL, Manistee, Mich., to Miss Mary Foster of Traverse City, June 2.

JONAS B. RAYMAN, Toledo, Ohio, to Miss Lila Tobin of Miami Beach, Fla., May 22.

JOHN B. TUTTLE to Mrs. Minnie H. Buchanan, both of Craigsville, Va., June 7.

SIMON YOUNG SALTMAN, Chicago, to Miss Goldye Lazarus of Brooklyn, July 1.

NORMAN E. FISHER, Toledo, Ohio, to Miss Jeanne Littwitz of Dayton, May 30.

SIMON S. RUBIN, Chicago, to Miss Anna Chesney of Philadelphia, May 25.

HOWARD G. BRUSS to Miss Catherine White, both of Toledo, May 30.

DARRELL C. CRAIN JR., Washington, D. C., to Miss Louise Moore, July 12.

Deaths

Robert Gibson Eccles ⊕ Brooklyn; Long Island College Hospital, Brooklyn, 1881; member of the American Association of Anatomists; professor of organic chemistry and dean, Brooklyn College of Pharmacy; at one time chemist to the United States Department of Indian Affairs; past president of the New York Pharmaceutical Association and the chemical section of the Brooklyn Institute of Arts and Sciences; author of "Food Preservatives, Their Advantage and Proper Use," and others, also monographs on medicine, pharmacy and scientific subjects; aged 86; died, June 9, in St. John's Hospital, of injuries received when he was struck by a street car.

Frank Anderson Overbay ⊕ New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1914; assistant professor of ophthalmology, Louisiana State University Medical Center; fellow of the American College of Surgeons; visiting ophthalmologist to the Touro Infirmary, 1914-1918, senior ophthalmologist to the Presbyterian Hospital, 1918-1924; senior ophthalmologist to the French Hospital, senior associate ophthalmologist to the Southern Baptist Hospital and visiting ophthalmologist to the Charity Hospital; aged 51; died suddenly, May 10, of heart disease.

Fred Albert Simmons, Boston; Columbia University College of Physicians and Surgeons, New York, 1903; member of the Massachusetts Medical Society and the New England Otological and Laryngological Society; at one time instructor in otology, Harvard University Medical School; veteran of the Spanish-American and World wars; formerly on the staffs of the Massachusetts General Hospital and Massachusetts Eye and Ear Infirmary; aged 56; died, May 27, of hypertension, arteriosclerosis and dissecting aneurysm of the aorta.

Herman Campbell Stevens ⊕ Elyria, Ohio; Rush Medical College, Chicago, 1913; past president of the Lorain County Medical Society; research fellow in experimental medicine, Western Reserve University, Cleveland, since 1928; physician for the American Red Cross during the World War; assistant professor of neurology, University of Illinois College of Medicine, Chicago, 1918-1919; aged 55; formerly on the staffs of St. Luke's Hospital, Cleveland, and the Elyria Memorial Hospital, where he died, May 27, of pneumonia.

Chester Allen Amos ⊕ Alexandria, Va.; University of Virginia Department of Medicine, Charlottesville, 1917; formerly professor of histology and embryology, Georgetown University School of Medicine, Washington, D. C.; served during the World War; on the staff of the Alexandria Hospital; aged 41; was killed, June 10, when the automobile in which he was driving was struck by a train.

Edward Danforth Keyes, Winona, Minn.; Rush Medical College, Chicago, 1885; president of the American Association of Railway Surgeons; member of the Minnesota State Medical Association; past president of the Winona County Medical Society; formerly health officer of Winona; for many years on the staff of the Winona General Hospital; aged 75; died, May 21, of cerebral thrombosis.

Hjalmar Ostrom ⊕ Quincy, Mass.; John A. Creighton Medical College, Omaha, 1911; missionary to the Belgian Congo for seventeen years representing the American Baptist Foreign Missionary Society; aged 52; died, May 24, in the New England Baptist Hospital, Boston, of peritonitis and hemorrhage, following subtotal gastrectomy.

Everett Augustin Lockett ⊕ Winston-Salem, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1902; fellow of the American College of Surgeons; served during the World War; on the staffs of the City Memorial and North Carolina Baptist hospitals; aged 55; was found dead, June 26, of angina pectoris.

Nicholas Vincent Walsh, Staten Island, N. Y.; Long Island College Hospital, Brooklyn, 1918; member of the Medical Society of the State of New York; on the staff of St. Vincent's Hospital; aged 45; died, May 25, at Deal Lake, N. J., of hypertension, and heart disease.

Albert De Forest Wickett, Ann Arbor, Mich.; University of Michigan Medical School, Ann Arbor, 1917; formerly assistant professor of internal medicine at his alma mater; on the staff of St. Joseph's Mercy Hospital; aged 44; died suddenly, May 1, of coronary thrombosis.

Harry Michael Hepperlen ⊕ Beatrice, Neb.; Keokuk (Iowa) Medical College, 1891; Jefferson Medical College of Philadelphia, 1896; fellow of the American College of Surgeons; on the staff of the Lutheran Hospital; aged 66; died, May 5, of carcinoma of the prostate.

Eugene Kneeland Smith, Lovelock, Nev.; Medical Department of the University of California, San Francisco, 1904; served during the Spanish-American and World wars; formerly medical superintendent of the Lovelock Hospital; aged 54; was killed, May 16, in an automobile accident.

Harry Arthur Vosburg Jr., Du Bois, Pa.; Jefferson Medical College of Philadelphia, 1912; member of the Medical Society of the State of Pennsylvania; on the staffs of the Du Bois and Maple Avenue hospitals; aged 44; died, May 18, of acute hemorrhagic nephritis.

Samuel Wellington Irving ⊕ New Britain, Conn.; Yale University School of Medicine, New Haven, 1891; past president of the Hartford County Medical Society; aged 73; on the staff of the New Britain General Hospital, where he died, May 8, of coronary occlusion.

Walter Baer Weidler ⊕ New York; University of Pennsylvania School of Medicine, Philadelphia, 1898; formerly on the staffs of the Sharon (Conn.) Hospital, Flushing (N. Y.) and Nassau Hospital, Mineola; aged 60; hanged himself, June 22.

William S. Davis, Detroit; Medical College of Ohio, Cincinnati, 1890; veteran of the Spanish-American War; at one time health commissioner of Vigo County, Indiana; aged 68; died, June 2, of cerebral embolism and chronic myocarditis.

Frederick Rhinhart Dorn, Echo, Ore.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; member of the Oregon State Medical Society; aged 63; died, April 4, of heart disease.

Herman Bocken ⊕ Harlan, Iowa; University of Nebraska College of Medicine, Omaha, 1911; past president of the Shelby County Medical Society; county coroner; on the staff of the Harlan Hospital; aged 46; died, June 10, of pneumonia.

Ernest Oliver Winship ⊕ New London, Conn.; University of Vermont College of Medicine, Burlington, 1900; on the staff of the Lawrence and Memorial Associated Hospitals; aged 58; died, June 1, of carcinoma of the liver.

Saul Steiner, New York; University of Bucarest School of Medicine, Bucarest, Roumania, 1901; on the staffs of the Westside Hospital and Dispensary and the Broad Street Hospital; aged 62; died, June 10, of heart disease.

David Edward Bowman, Toledo, Ohio; University of Michigan Medical School, Ann Arbor, 1881; member of the Ohio State Medical Association; aged 77; died, June 21, of lobar pneumonia and intestinal obstruction.

David Christian Batson, Birmingham, Ala.; University of Nashville (Tenn.) Medical Department, 1905; member of the Medical Association of the State of Alabama; aged 56; died, May 17, of a self inflicted bullet wound.

William H. Pallett, Crete, Neb.; Kansas City (Mo.) Medical College, 1898; served during the World War; for twenty-five years member of the school board; aged 63; died, June 19, of cerebral hemorrhage.

John H. Reagan, San Antonio, Texas (registered by Texas State Board of Medical Examiners, Act of 1907); member of the State Medical Association of Texas; aged 64; died suddenly, June 22, of heart disease.

Harrie Milton Gardner, Cambridge, Mass.; University of Vermont College of Medicine, Burlington, 1895; member of the Massachusetts Medical Society; aged 64; died, May 11, of cirrhosis of the liver.

William Fletcher Penn, Tuskegee, Ala.; Yale University School of Medicine, New Haven, Conn., 1897; connected with the Veterans' Administration Facility; aged 62; died, May 31, of chronic myocarditis.

Elbert L. Huestis, Colorado Springs, Colo.; Medical College of Ohio, Cincinnati, 1888; aged 71; died, May 8, in the Modern Woodmen of America Sanatorium, Woodmen, of pulmonary tuberculosis.

Charles G. Parker, Gallipolis, Ohio; Medical College of Ohio, Cincinnati, 1888; member of the Ohio State Medical Association; for many years coroner; aged 76; died, June 12, of heart disease.

Samuel Johnson Stewart ⊕ Seattle; Hahnemann Hospital College of San Francisco, 1897; Medico-Chirurgical College of Philadelphia, 1901; aged 71; died, May 14, of arteriosclerosis and heart disease.

Herbert Harmon Purinton ⊕ Somersworth, N. H.; Medical School of Maine, Portland, 1891; member of the Massachusetts Medical Society; aged 69; died, June 7, of diabetes mellitus.

William W. Pirkle, Cumming, Ga.; Atlanta Medical College, 1897; member of the Medical Association of Georgia; formerly mayor; aged 64; died suddenly, June 8, of heart disease.

John P. Neely, New London, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1877; formerly county coroner; aged 80; died, March 31, at Palmyra, of cerebral embolism.

Raymond Hayes Spence, Painesville, Ohio; Miami Medical College, Cincinnati, 1901; aged 58; died, May 28, in the Lake County Memorial Hospital, of coronary occlusion.

Clarence James Whalen, Utica, N. Y.; Syracuse University College of Medicine, 1904; on the staff of the Faxton Hospital; aged 52; died, May 21, of lobar pneumonia.

Alexander Patterson, Oakland, Calif.; Cooper Medical College, San Francisco, 1893; served during the World War; aged 70; died, May 29, of arthritis and pneumonia.

Edward Frank Partello, Detroit; Dutton Medical College, Chicago, 1899; veteran of the Spanish-American War; aged 69; died, June 17, of cardiovascular renal disease.

Joseph H. Hindman, Humboldt, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1895; aged 61; died, May 27, of spinal sclerosis.

Alvah Negus, Keswick, Iowa; State University of Iowa College of Medicine, Iowa City, 1906; served during the World War; aged 68; died, April 15, of encephalitis.

Joseph Montgomery Slaughter, Van Alstyne, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1904; aged 53; died, May 10.

Charles Chandler Parmer, Centralia, Mo.; University of Missouri School of Medicine, Columbia, 1898; aged 61; died, May 25, of acute edema of the lungs.

Bernard M. Ross, Holland, Mich.; Eclectic Medical Institute, Cincinnati, 1882; aged 74; died, May 21, of pulmonary edema and multiple spinal sclerosis.

John Edgar Walsh ⊕ Washington, D. C.; Columbian University Medical Department, Washington, 1890; aged 69; died, June 22, of cerebral hemorrhage.

Jacob Mendelsohn ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1922; aged 33; died, May 8, of tuberculosis.

Aaron W. Snyder, Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1901; aged 81; died, June 13, of cystitis and chronic prostatitis.

James Lupton Neave, Zanesville, Ohio; Miami Medical College, Cincinnati, 1874; aged 84; died, June 17, in the Good Samaritan Hospital, of senility.

Elihu Duane Tallman, Covert, Mich.; University of Michigan Medical School, Ann Arbor, 1882; aged 79; died, June 6, of chronic myocarditis.

Charles Cecil Huff, Homestead, Pa.; University of Michigan Homeopathic Medical School, Ann Arbor, 1881; aged 79; died, June 12, of heart block.

William Brownlow Spoon, Morristown, Tenn.; Chattanooga Medical College, 1893; aged 69; was killed, May 27, in an automobile accident.

John Phillip Ott, Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1878; aged 79; died, April 29, of heart disease.

Benjamin Baumoehl, New York; University and Bellevue Hospital Medical College, New York, 1913; aged 44; died, May 18, of myocarditis.

Carmen Frank Russo, Chicago; University of Illinois College of Medicine, Chicago, 1931; aged 32; died, May 25, of pulmonary tuberculosis.

Henrietta A. Buchanan, Cincinnati; Woman's Medical College of Cincinnati, 1894; aged 79; died, June 11, of chronic interstitial nephritis.

Dodson Ramseur Schenck, Greenville, S. C.; Jefferson Medical College of Philadelphia, 1883; aged 73; died, June 7, of angina pectoris.

Norman M. Spradley, Boonville, Ind.; Louisville (Ky.) Medical College, 1890; aged 73; died, June 4, of cerebral arteriosclerosis.

John H. Stigall, Burnside, Ky.; University of Louisville School of Medicine, 1889; aged 72; died, May 28, of cerebral hemorrhage.

Harry E. Palmer, Dayton, Ohio; New York Homeopathic Medical College, 1885; aged 76; died, May 20, of cerebral hemorrhage.

William C. Reid, Oakland, Calif.; University of Louisville (Ky.) School of Medicine, 1877; aged 80; died, May 6, of pneumonia.

Correspondence

ESTIMATION OF VITAMIN C

To the Editor:—I enjoyed reading the editorial on the estimation of vitamin C in THE JOURNAL, June 2. May I call your attention to one sentence in the first paragraph, which states that vitamin C is clearly recognized as one of the hexuronic acids. This is, I believe, an error of chemical description.

R. B., New York.

NOTE.—Our correspondent is quite correct in pointing out that ascorbic acid, now identified with vitamin C, can no longer be regarded as one of the hexuronic acids, since its structure has been clearly demonstrated. E. H. Farmer (Annual Reports on the Progress of Chemistry for 1933, p. 167) says: "Szent-Györgyi's compound is not a member of the uronic acid class and has been renamed ascorbic acid." This statement is evidently based on an article by Haworth and Szent-Györgyi (*Nature* **131**:24, 1933) in which it appears that

> in view of the fact that (1) hexuronic acid is the name of a class of substances rather than that of one individual compound and that (2) the material described as a hexuronic acid isolated from adrenal cortex and now from Paprika contains a molecule of water less than is required for a hexuronic acid, we wish to ascribe the name ascorbic acid to the crystalline substance $C_6H_8O_6$ which has been the subject of earlier communications from our laboratories.

The uronic acids, of which glycuronic acid is a typical example, have the empirical formula $C_6H_{10}O_7$. They contain both an aldehyde and a carboxyl group. The formula for ascorbic acid is

$$CH_2OH\text{-}CHOH\text{-}\underset{\displaystyle\underset{\displaystyle O}{\frown}}{CH\text{-}COH}{=}COH\text{-}C{=}O$$

(Compare Hirst and others: *J. Chem. Soc.*, 1933, pp. 1270, 1419, 1564; 1934, p. 62).—ED.

TINTED LENSES IN OPHTHALMOLOGY

To the Editor:—I congratulate W. W. Coblentz for calling attention to the unproved theories and extravagant claims made by certain manufacturers concerning tinted lenses. In his effort to emphasize his criticism, however, I feel that he has gone too far in creating the impression that tinted lenses are without merit. Tinted lenses have a definite and positive therapeutic value in many ocular diseases. I base this statement not on theory but on practical experience in prescribing tinted lenses for many purposes over a period of many years and on the answers to a questionnaire recently addressed to prominent ophthalmologists throughout the United States. The replies are all from ophthalmologists certified by the American Board of Ophthalmic Examinations and from eye surgeons in various sections of the country, representing a cross section of the ophthalmic profession. A great majority of these recommend the use of tinted lenses for the following diseases of the eye: acute, subacute and chronic conjunctivitis, chronic blepharitis, blepharospasm, vernal conjunctivitis, trachoma, phlyctenular conjunctivitis, keratoconjunctivitis, interstitial keratitis, iritis, iridocyclitis, incipient cataract, postoperative cataract, uveitis, scleritis, neuroretinitis, retinitis, retinitis pigmentosa, retinal hyperesthesia, optic neuritis, myopia, aniridia, photophobia, albinism, and blond approaching albinism.

There is added to this long list of diseases the following: persons who are generally nervous (sympatheticotonia), those engaged in occupations requiring exposure to sunlight or constant, bright, artificial light, automobile driving, exposure to sunlight, reflection from sand, water and highways. To these I add my own suggestion—persons wearing moderate and high grade myopic lenses.

My chief complaint is based on Coblentz's evaluation of tinted lenses purely on their physical properties resulting from "test tube" experiments, that he has failed to give consideration to the many disease conditions of the eye, and that he has regarded the human eye as a camera and has failed to realize that vision is concerned not only with the eyeball itself but with the central nervous system, particularly a sympathetic nervous system and a series of visual centers and subcenters in the brain, all of which react directly or indirectly under the influence of light.

Judging that Coblentz has based his remarks in THE JOURNAL of April 14 on another article published in the *American Journal of Ophthalmology* in October 1932, I take it that his analysis of the value of tinted lenses is based on their transmission properties. From a laboratory standpoint his assumption is true, but only in the use of tinted glasses for industrial purposes to protect the eye from ultraviolet rays used in industries and from infra-red rays in occupations under great heat. He has arrived at the conclusion without proof that a tinted lens in order to eliminate glare must be so dark that it would reduce considerably visual acuity and would be impossible for use at night.

I wish to correct this error. There is a definite physiologic and pathologic disturbance of the retina known as hyperesthesia. It is just as distinct an entity as allergy of the skin in persons in whom dermatographia may be produced by mechanical irritation. Just as some persons are sensitive to heat and mechanical irritations, so the eyes of certain individuals are sensitive to light. Nearly every individual has a certain tolerance to the glare of light. This degree of tolerance varies very widely in persons of dark complexion compared with blond.

Most often pigmentation of the retinal epithelium of the eye determines the tolerance to light. For hyperesthetic individuals it is only necessary to reduce the glare in a sufficient degree to bring about tolerance to light in that particular person. Therefore it is entirely erroneous for the physicist to tell the ophthalmologist that in order to reduce glare in a given individual it is necessary to eliminate light itself. There is no intent on the part of tinted lenses to eliminate glare completely but to reduce it in such a manner as to make it tolerant. Therefore I have found in my own practice that the light tinted lenses are of great importance for constant wear in those individuals who have an unusual sensitivity to glare or to light itself.

Coblentz fails to recognize certain pathologic states of the eye that require tinted lenses in order to bring about comfort for the patient. He has failed to realize that many children with photophobia due to a supersensitive nervous system may have endocrine disturbances or infections, as in the case of chorea. These cases are greatly benefited by light tinted lenses aiming to cut down only partially the sensitivity of the retina, which in turn reduces the sensitivity of the general nervous system.

The whole matter of tinted lenses in ophthalmology needs investigation. For over a year I have been collecting data on this particular subject and am now making a detailed study which may lead to a clearer understanding from the ophthalmologist's point of view as to the need of tinted lenses in various pathologic states and in the apparently normal eye with marked reduction of pigment in the uveal tract. It is hoped that with the completion of this study there will be a more rational understanding of the indications for colored glasses.

If the manufacturers of tinted lenses have exaggerated their claims, and I believe some have, it is because the physicists, the ophthalmologists and the makers have not joined forces in determining the exact status of this type of lenses. Many thousands of peopl wear tinted lenses with comfort not obtainable with nontinted lenses. Many physicians wear them and defend their value. If the public has discovered the value of colored lenses for which the physicist and ophthalmologist have not yet found an explanation, then the scientist is at fault.

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Cod liver oil was used for many years before it was found that vitamin A and D were the basis for its value. I am sure that the reason will soon be discovered for the use of tinted lenses for everyday use for individuals who wear them with comfort.

LOUIS LEHRFELD, M.D., Philadelphia.

NOTE.—This letter was referred directly to Dr. W. W. Coblentz, who replies:

To the Editor:—The function of the Council on Physical Therapy is to keep the medical profession and the public informed regarding developments in apparatus and devices having a direct application in medicine.

At the annual meeting of the Council last December I was requested to survey the advertising situation of tinted lenses. The manuscript report was read by a physicist qualified in physical optics, selected by myself, and an ophthalmologist of recognized standing selected by the Council. Both readers approved of the presentation and both thought I was too generous in my discussion and too optimistic in my conclusions regarding the advertising situation. With the approval of the Council as a whole the paper was published in THE JOURNAL, April 14. As was to be expected, the article has brought forth comments both favorable and unfavorable, the latter apparently based to some extent on a misconception of the aims and purposes of the survey.

While Dr. Lehrfeld's discussion is ultracritical and in places is open to question (e. g., dark glasses for night driving) as a whole it is constructive and is a step in the right direction. As pointed out in my earlier discussion of the subject (*Am. J. Ophth.* **15**:932 [Oct.] 1932) it is the duty of researchers in ophthalmology to prescribe what is needed, instead of allowing themselves to be told by advertisers of new fangled lenses of improved merits.

A few comments on Dr. Lehrfeld's paper are in order. At the outset it is to be distinctly emphasized that neither the Council as a whole, nor myself, who have become personally responsible because my name is attached to the paper, desire to give the impression that "tinted lenses are without merit."

My discussion of the tinted lens situation is confined to the advertising situation, not to the prescribing of tinted lenses to alleviate disease conditions of the eye. In accepting physical therapy devices the Council makes the broad distinction that the advertiser shall confine himself to descriptions of the construction and operation of his device, leaving diagnosis and treatment to the medical profession. If the paper apparently has "failed" to give due consideration to the many disease conditions of the eye it is because the reader has misunderstood the scope of the survey.

Dr. Lehrfeld's enumeration of the various diseases of the eye for which tinted lenses are recommended should prove useful in future considerations relative to the use of tinted lenses for healthy and diseased eyes. But as he so aptly points out, since, for hyperesthetic individuals, the shade of lens to be prescribed to bring about tolerance of light varies with the particular person, it seems hazardous, at least until the subject is better understood, to use the physiologic test instead of the physical evaluation of the lens by the "test tube" method, which Dr. Lehrfeld criticizes.

For the present it seems to me that the surest procedure to guard against the effects of glare is to determine the transmissive property of the tinted lens. For example, just now I am making measurements of solar ultraviolet radiation in Arizona, at altitudes of 7,000 and 11,000 feet, under an illumination of some 10,000 foot candles. The tinted lens commonly worn is a shade 3, opaque to ultraviolet and infra-red, transmitting about 14 per cent of "light," visible radiation. Temporarily I attempted to use another similar type of lens, apparently only slightly lighter in color. Finding that it was producing eyestrain and headache, I shipped it to the National Bureau of Standards, receiving a report that it transmitted 29 per cent visible radiation. Evidently the eyestrain was caused by the excess light transmitted.

Dr. Lehrfeld's statement that "the whole matter of tinted lenses in ophthalmology needs investigation" is entirely in agreement with what I have claimed all along. My own contribution has been and will continue to be the description of the physical (transmissive) properties of tinted lenses, looking forward to the correlation, if any, of the physical properties with the physiologic observations. In the meantime Dr. Lehrfeld's promised contribution to the ophthalmologic questions will be awaited with interest.

W. W. COBLENTZ, PH.D.,
Lowell Observatory,
Flagstaff, Ariz.

SIMULTANEOUS IMMUNIZATIONS

To the Editor:—I am interested in the communications on simultaneous immunizations in THE JOURNAL, April 14, April 21 and June 2.

I was in charge of a mobile clinic in Utah from June 1928 to April 1930 for the prevention of disease. During one year I gave more than 63,000 doses of vaccine. Experience proved that a person could be immunized against diphtheria, typhoid and smallpox at the same time without more reaction than one gets from vaccine given for only one disease, as nearly as I could judge.

From April 1930 to September 1930 I served as director of the Utah County Health Unit at Provo, Utah. From September 1930 to July 1933 I served as director of Gila County Health Unit at Globe, Arizona. As deaths were occurring in Gila County from both typhoid and diphtheria and as smallpox was present, I gave simultaneous inoculations for all three diseases to thousands of persons. Several schools were inoculated 100 per cent. About 10 per cent of those inoculated complained of reactions; about 1 or 2 per cent were quite ill for a day or so.

Some French observers state that a much higher percentage are made Schick negative by giving typhoid vaccine with the diphtheria toxoid.

My successor as director of the Gila County Health Unit at Globe reports that he Schick tested 350 pupils in one group and 180 in another that I had inoculated two years previously. One in seventy were Schick positive in the larger group and one in sixty in the smaller—over 98 per cent protected.

In order to avoid severe reactions in giving typhoid vaccine I believe that the dose should be carefully proportioned to the weight of the child, 0.5 cc. used for the first dose and 1 cc. for the second and third doses being taken as the standard for a 160 pound (72 Kg.) man. The dose for a woman weighing 160 pounds should be about 20 per cent less, and any person having a sharp reaction should be given a smaller dose next time.

It was also a fact that parents would bring children for three inoculations but if one wanted them to come oftener they frequently would not do so. The children usually developed a fixed dislike to getting inoculated after three doses. If vaccines are not given simultaneously, the children usually are not protected from more than one disease.

During five years of active experience there were no fatalities, no one was made seriously ill, and no lasting ill effects were observed. But in that part of the country there are a lot of graves of persons who died of preventable diseases unprotected.

A. C. MCKEAN, M.D., Norway, Iowa.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ESSENTIAL HYPERTENSION IN A YOUNG GIRL

To the Editor:—Miss R. H., aged 17, came under my observation in July 1933, giving a history of "high blood pressure," frequent headaches and excessive sweating. Physical examination was negative except for flushing of the face, transient erythematous mottling of the neck, slight fulness of the thyroid and a heart rate of 120. The weight was 100 pounds (45 Kg.). Urinalysis gave negative results. The basal metabolic rate on various occasions was —4, —7; +4, +4; —11, —2; +8, +3. A chest roentgenogram showed the lungs normal and the heart normal in size and shape. An electrocardiogram was entirely normal once and showed a flattened T wave in the second lead in a later tracing. The blood Wassermann reaction was negative; the blood nonprotein nitrogen was 31 and sugar 103. Fundus examination showed slight tortuosity of the vessels. Further roentgen studies showed a suggestion of calcification of the vessels of the forearm. The cranial vault showed evidence of increased convolutional markings; the sella turcica was small and flattened, the floor well preserved. The systolic and diastolic blood pressure fluctuates between 150/102 and 174/124. The latter blood pressure reading was taken this month, the patient feeling fine and showing a gain of 7 pounds (3.2 Kg.) over her first recorded weight. Medication with thyroid extract and phenobarbital in small doses has had no effect on symptoms or blood pressure. Is essential hypertension the only diagnosis possible; what is the probable prognosis? Please omit name.

M.D., New York.

ANSWER.—Essential hypertension is not the only diagnosis possible. In fact, essential hypertension is never a complete diagnosis, for all instances of hypertensive disease must have some etiology. When the etiology cannot be found, it is perhaps wiser to call the disturbance "hypertensive disease, etiology undetermined." This is an unusual instance of marked arterial hypertension, since it occurs in a girl so young and apparently free of objective evidence of a source or sources of intoxication.

The patient presents conspicuous evidence of marked vasomotor instability, as shown by the intense flushing and mottling of the skin, tachycardia, cephalalgia and hyperhidrosis. In part the arteriolar hypertonia may be of emotional origin; psychologic probing into the emotional life of the patient may possibly reveal intense and continuous violent conflicts. Characteristic of this form of hypertonia is the acute and violent rise in arterial tension that occurs when there is proper emotional stimulation; often a rise of from 50 to 70 mm. of mercury in a few seconds is noted. These acute exacerbations are frequently accompanied by the vasomotor phenomena described. However, in the great majority of patients with purely emotional hypertension the arterial tension falls to or near normal levels when emotional calm is induced, unless the process has continued so long that progressive arterial hypertensive disease is well established.

The possibility of coarctation of the aorta must be constantly borne in mind in differentiating the etiology of hypertension in one so young as this patient. Although this congenital anomaly accounts for perhaps but one of every thousand cases of hypertension, it must not be forgotten. It may be readily ruled out by determining the arterial tension in the lower extremities; with no stenosis of the aorta this is invariably somewhat higher than in the arms, whereas in the presence of coarctation the tension in the legs is much lower.

Hyperepinephrinemia, due to suprarenal chromaffin cell neoplasms, has been found to be the explanation of a few isolated instances of severe and almost uncontrollable arterial hypertension in young persons. This rare form of hypertension of hormonic origin should show conspicuous evidences of vasomotor hyperirritability, as does the present patient. These patients frequently show disturbed dextrose metabolism and a lowered tolerance to administered dextrose. Dextrose tolerance studies on this patient are indicated.

The relation of pituitary disorders to hypertensive disease is not clearly understood as yet. That the pituitary gland secretes a hormonic pressor substance is unquestioned, but whether or not perversion of secretion or hypersecretion of this substance is clinically a frequent or significant etiologic factor in hypertension is unsettled. The data presented in the query indicate no gross evidence of pituitary change, either in the roentgenologic examination of the sella turcica or in the weight and physique of the patient. Nothing was stated about any menstrual irregularities.

The significance of the suggested calcification in the vessels of the forearm is difficult to evaluate. It has been suggested that hypertension may be due to a hypocalcemia such as occurs in parathyroprivia. The evidence in favor of this conception is far from convincing and other studies indicate that any relationship between the blood calcium content and the arterial tension are of physiologic rather than pathologic import. At present, presenile calcium deposition in the sternal cartilage is being found more and more frequently by roentgenologists in young persons. Whether this increased frequency and degree of unusual calcium deposition has any association with the far more general and liberal use of vitamin D concentrates is, of course, most uncertain, but it is a stimulating thought. Calcification in the larger arteries is by no means a common phenomenon in hypertensive disease, even in much older patients, and frequently occurs quite independently of any elevation of the blood pressure. Hypertensive disease is a hypertonic disturbance of the arteriolar media, whereas arteriosclerosis is an entirely separate entity involving the intima of the larger vessels.

If the true underlying etiology of this girl's hypertension is not found and eradicated, or at least ameliorated, the prognosis is poor. The patient is in no immediate jeopardy, but if the hypertension should continue for any great length of time the progressive degenerative changes of arterial hypertensive disease are inevitable. The ophthalmoscopic evidence of increased tortuosity of the retinal vessels indicates that some of these changes have already occurred. These are the result and not the cause of the disease. It may be taken as a general clinical axiom that the earlier in life hypertensive disease starts the more rapid are the progressive degenerative changes and, therefore, the worse the prognosis. Naturally there are exceptions to this general rule, but it is applicable in the great majority of cases.

TOXIC EFFECTS OF BEE STINGS

To the Editor:—A man, aged 38, has a peculiar reaction following a sting by bees, wasps, bumblebees or hornets. In about two minutes a severe palpitation develops with an increase in the pulse rate to 120 per minute or higher. A "roaring and pounding" develops "in his head." On one or two occasions he has lost consciousness, although this is not the rule. Urticarial eruptions soon appear. These are chiefly in the nature of puffing of the lips and face, eruptions on the extremities, and occasionally the swelling of an entire extremity, usually not the one on which the sting occurred. There is usually no wheal at the sight of the sting, but an oozing of a few drops of blood. Within about three quarters of an hour the symptoms gradually begin to subside, and at this time a more or less generalized pruritus begins. The man formerly kept bees and was stung often without these reactions. He left his business of farming to serve in the World War. Since returning to his farm, he has the reactions every time he is stung, possibly a dozen or more different times. Would the reaction be classed as an anaphylaxis? If so, is there some way in which the man may be desensitized? What should be done in the line of prevention of these reactions and treatment in case of their occurrence? Your opinion will be appreciated. If this is published kindly omit name and address.

M.D., Wisconsin.

ANSWER.—The literature contains a number of references dealing with the marked toxic effects of the sting of bees. In discussing the general question it is important to realize that any of three possible reactions may take place. The first is the toxic effect of the venom contained in the stinger. This material is toxic to man and affects every one if the dose is adequate. Some individuals may respond to a very small dose. The symptoms described consist mainly of circulatory collapse, coma and hemolytic changes in the blood stream. It is not to be regarded as an anaphylactic or allergic reaction.

Another type of reaction as the result of the sting of bees is allergic. This may consist of any of the symptoms commonly seen in ordinary clinical manifestations of allergy. Generalized urticaria and angioneurotic edema have been most frequently described. Asthma or hay fever has also been described as an effect of bee sting. Two possible explanations for the allergic reaction have been advanced. One is that the individual is pollen sensitive and the bee sting has introduced pollen (Gibb, D. F.: Anaphylaxis from Pollen Introduced by Bee Sting, *Canad. M. A. J.* **19**:461 [Oct.] 1928). From the more recent observations by Benson and others it seems unlikely that this is an important cause of allergic reaction.

The most exhaustive piece of work on allergy from bee sting (Benson, R. L., and Semenov, H.: Allergy in Its Relation to Bee Sting, *J. Allergy* **1**:105 [Jan.] 1930) appears to indicate that the symptoms produced are due neither to the toxic fraction of the poison nor to the pollen, but rather to the protein of the bee. These authors found that, after removal of the poison from the stinger mechanism, extracts of the stinger and of the body of the bee were capable of producing allergic responses in a sensitive individual.

Attempts at desensitization are worthy of trial (Braun, L. I.: Desensitization of a Patient Hypersensitive to Bee Sting, *South*

African M. Record **23**:408 [Sept. 26] 1925, and also Benson and Semenov). The last mentioned authors extracted the venom-free stingers and the body of the bee separately and gave injections with gradually increasing doses with an apparently almost complete clinical desensitization. For details the reader is advised to consult Benson's original article. For prevention of reactions other than specific desensitization it is possible that the administration of ephedrine about one-half hour preceding exposure might be of partial benefit. For the treatment of the reactions, epinephrine hypodermically should be the most efficacious remedy. For more prolonged effect after epinephrine has been administered, ephedrine orally should be used.

SENSITIZATION TO BLOOD—SENSITIVITY TO GASOLINE

To the Editor:—1. Can a state of sensitivity or anaphylaxis to human blood (serum or whole) be induced in a human being by the intramuscular, subcutaneous, intraperitoneal or intravenous injection of human blood? For example, if in infancy or later it is necessary to inject whole blood or convalescent serum for some reason will the patient become sensitive to human protein (blood) so as to make it dangerous to give him a blood transfusion or other injection of blood at some subsequent time? 2. Is there any way to desensitize a patient who is sensitive to gasoline? He is a mechanic and his being sensitive to this fuel makes his work in a garage irregular because of the severe skin reaction he suffers when he gets it on his clothing or body. A patch test with one drop produced an intense reaction in about two hours, with the development of a bulla locally and some general itching. Please omit name, state and address.

M.D., Ohio.

ANSWER.—1. Although the possibility of sensitization to the proteins of the human body or its secretions has been suggested, the major opinion is that such an occurrence is not likely. The reports of such occurrences are not well authenticated. An individual may become sensitized, however, to a specific substance (horse dander, for example) by being transfused with the blood of an allergic person sensitive to that substance.

2. Contact dermatitis due to occupational irritants is extremely difficult to manage. Two possible methods of therapy may be considered. The gasoline could be diluted with an oil such as almond oil and, beginning with small doses, by subcutaneous or intramuscular injection, one may succeed in finally arriving at a dose which will protect the patient. The other alternative is to have the patient bathe himself daily with water containing increasing amounts of the gasoline. With both methods great care must be exercised because of the possibility of producing a widespread reaction. It must be emphasized that such methods of therapy are as yet in the experimental stage.

ULCER OF DUODENUM IN A CHILD

To the Editor:—A girl, aged 6 years, vomited bile and had a temperature of 101 F. at 1 p. m. October 7. The area over the appendix and especially from the appendix to the costal margin was tender. The child had had several previous attacks and a druggist had given her mild mercurous chloride in small doses. The child lived in Detroit and had come here October 7 with her mother. At 7 p. m. she was in shock and died at Mercy Hospital. The intern performed a postmortem, which revealed a severe peritonitis beginning at the pylorus and extending about 12 inches. There was also a severe parietal peritonitis. After the inflamed covering was stripped from the duodenum, the bowel for 12 inches looked as though it had been boiled. When it was opened it had a fiery red and thickened appearance. I can find only slight information in my books on duodenitis. Is this condition rare or is it more than just a duodenitis? My fellow physicians are also puzzled. Please omit name.

M.D., Ohio.

ANSWER.—The clinical and pathologic observations in the case of this child, suffering with fever, vomiting and abdominal tenderness, are not as detailed as one might wish to aid in an adequate explanation for the condition that caused her death.

The localized peritonitis involving 12 inches of the duodenum would lead one to wonder as to the condition of surrounding organs, such as the pancreas, the bile duct, the ampulla of Vater and the arteries and veins supplying the duodenum.

The boiled appearance of the duodenum with the fiery red thickened appearance of its interior, together with the localized peritonitis, gives the impression of some sort of duodenal ulcer. The most frequent type of ulcer of the duodenum which occurs in childhood is that found in new-born and very young infants. In the new-born period such ulcers may be manifested clinically by hematemesis or melena. In later infancy, those who have suffered from wasting illness are prone to develop such ulcers. These may cause erosion of blood vessels and thereby hemorrhage, or a complete destruction of the intestinal wall may result in perforation.

Following burns or scalds, an acute ulceration of the duodenum, known as "Curling's ulcer," may result. It is believed that these ulcers are found in cases in which sepsis is associated with the burn, giving rise to septic emboli capable of producing hemorrhagic infiltration in the alimentary canal.

Tuberculous ulceration of the duodenum is much less frequent than such ulcers occurring in the lower ilem.

The perforation of acute duodenal ulcers, such as those following burns, septic processes and typhoid, are rarely recognized at the bedside. Acute perforation of a chronic ulcer is characterized by sudden onset with pain, vomiting and collapse. In the history of the case in question there had been several previous attacks, presumably of abdominal pain and vomiting.

A subacute perforation of a duodenal ulcer may begin with sudden pain, followed by vomiting and prostration. The opening may have been small, and a thick mass of adherent lymph may cover the duodenum at this point.

While the finding of an ulcer or perforation is not mentioned in the pathologic examination of this case, the existence of a subacute perforation would explain the localized peritonitis, the external appearance of the bowel and the internal inflammation. The occurrence of such a condition in a 6 year old child would be unusual and rare. Perforation by a sharp foreign body that had passed through the intestine might be a possible cause.

Thrombosis of the branch of the pancreatoduodenal artery supplying the involved portion of the duodenum might result in such a clinical and pathologic picture.

The condition termed duodenitis is a catarrhal inflammation of the duodenum, probably associated with a catarrhal gastritis or cholecystitis. The symptoms produced by such a condition in the duodenum would be altogether different from those described in the case here considered.

TRICHLORETHYLENE AND ASTHMA

To the Editor:—Does the vapor of trichlorethylene aggravate asthma? This question is asked by an asthmatic patient who has been working during the past three years in a dry cleansing plant, where for the past two years trichlorethylene has been used and he comes in contact with the vapor two or three times a day for a few minutes. Sometimes the effect is such as to make him feel "drunk" and requires his going out of the plant into the fresh air. During the past two years his asthma has been worse than it was the year prior to these exposures to trichlorethylene. There is no legal action involved in this case. Please omit name.

M.D., Massachusetts.

ANSWER.—The vapor of trichlorethylene, like vapors of all other noxious materials, does aggravate bronchial asthma. However, it is not the cause of the attacks, as no cases have ever been reported due to this agent. It merely acts like the fumes of coal gas, sulphur and other chemicals by making the asthma worse than it would otherwise be.

It would seem in this case that the exposure to the vapor is too slight to be of much importance. The fact that the asthma is worse has probably no relationship to the exposure to the chemical.

This patient, like all other asthmatic patients, should be thoroughly studied from the allergic standpoint; this should include a careful history, an examination, Wassermann test, urine, blood and sputum tests and a roentgenogram of the chest. In addition, complete protein sensitization tests should be carried out.

SENSITIVITY TO SUNLIGHT

To the Editor:—Please give me references or suggest a line of treatment for a patient who is hypersensitive to direct sunlight and to ultraviolet rays. Even short exposure produces the next day an erythematous rash with pruritus, which is not easily controlled by ordinary local applications. Apparently no increased resistance is developed by one attack, for the reaction to each subsequent exposure is of equal severity. Please omit name.

M.D., Wyoming.

ANSWER.—There are two types of sensitiveness to sunlight. The first reacts at the point of contact soon after exposure to light with an edematous reaction confined to the point of contact with light; i. e., by a typical hive reaction. This reaction may be delayed one or several hours, but rarely for twenty-four hours.

The second type of case reacts at the point of contact with light with eczema, characterized by itching, redness of the skin, secretion and scaling. This reaction is always delayed and, instead of disappearing promptly as the hive case, becomes more pronounced on the second day and usually persists for one week.

Both types of case can be treated with ultraviolet rays in doses preferably just short of the amount that produces a local

reaction. The rays should be applied generally, points of natural exposure, such as the face, neck and hands, being avoided. The hive cases, on account of the quickness of appearance and disappearance of the reaction, can be treated at intervals of from one to three days. However, the eczematous type should not be treated so often. In both types, exposure of the skin to undue amounts of sunlight should be avoided by having the patient stay indoors on bright days, or protect the skin with colored scarfs on venturing out doors. Overexposure of a gross amount of skin to excessive doses of radiation may result seriously, so that treatment should be given with great care. The reader is referred to "Treatment of Physical Allergy" (treatment of heat and effort sensitiveness and cold sensitiveness and treatment of contact urticaria caused by light, cold and scratches) by W. W. Duke, *J. Allergy* **3**:408 (May) 1932.

TREATMENT OF SYPHILIS

To the Editor:—A man, aged 28, came to me saying that he contracted syphilis while in college and received prompt and rather extensive treatment. He states that he had in all about forty injections of neoarsphenamine and a smaller number of injections of bismuth and mercury compounds and bismuth arsphenamine sulphonate. The Wassermann reactions became negative after the third series of injections and has remained so. Each year he has had his blood examined and it was for this he came. The report on the specimen I drew was 4 plus. He desires treatment. The literature of syphilis with its conflicting claims for the various soluble and insoluble preparations of bismuth and mercury and the numerous arsenicals makes one wonder whether there is any consensus among syphilologists as to the proper regimen in a given case. I would value your opinion on this case. I should add that physical examination is negative. No spinal tap has as yet been made. Please omit name.

M.D., Oklahoma.

ANSWER.—The Wassermann test in this case should be repeated and, if still found to be 4 plus, treatment should be commenced. If the spinal fluid and physical examinations are negative, the case can be classified as asymptomatic or latent. There is no consensus among syphilologists as to the proper regimen in any stage of syphilis. The general trend is toward a combined therapy with one of the arsenicals conjointly with the heavy metals, bismuth or mercury compounds, and iodides in the interim. Some men feel that arsphenamine gives better results than neoarsphenamine. Others prefer bismuth arsphenamine sulphonate or silver arsphenamine. The large number of bismuth preparations put out by different manufacturers adds greatly to the confusion. The brands accepted by the Council on Pharmacy and Chemistry may be given the preference. The number of courses to be given, the total dosage and the duration of the treatment will depend on the response of the patient and periodic serologic control. Valuable information as to the treatment of syphilis may be found in the recent books by Schamberg and Wright and by Moore.

ALUM PRECIPITATED DIPHTHERIA TOXOID

To the Editor:—Will you please give me information about toxoid and alum precipitate? Would you advise giving it as a public health immunization from the age of 6 months through 8 years? Is the technic of giving it any different than when using the toxin antitoxin?

INQUIRER.

ANSWER.—Alum precipitated diphtheria toxoid, "alum toxoid" for short, is a grayish white precipitate suspended in physiologic solution of sodium chloride. Diphtheria toxoid is adsorbed by this precipitate. The antigenic value of the alum toxoid is determined by its power to induce the formation of diphtheria antitoxin on injection into a guinea-pig. The indication for the use of alum toxoid is susceptibility to diphtheria.

For practical purposes all children of preschool age are regarded as susceptible, and the preferable age for preventive immunization by means of alum toxoid is between 6 months and 2 years. In children over 8 years of age the question of susceptibility should be determined by means of the Schick test. The alum toxoid may be obtainable in packages containing one or more immunizing doses. Active immunization is effected by injecting a single dose of alum toxoid subcutaneously at the insertion of the deltoid muscle or in younger children between the shoulder blades. Before injection the vial containing the alum toxoid must be shaken vigorously because, as stated, it is the precipitate that carries the immunizing toxoid. There may remain for weeks a swelling or lump at the site of injection, because the material is absorbed slowly. Immunity develops gradually; as a rule the Schick test becomes negative six weeks or so after the injection. Up to this time at least, one dose of alum toxoid has given highly satisfactory results, and the method appears to be an advance of great practical value.

HEAT TREATMENT OF MULTIPLE SCLEROSIS

To the Editor:—In the April issue of the *Ladies Home Journal* appears a very pretentious article entitled "Young Doctor Heat," written by Paul de Kruif. This article has been read and thoroughly digested by an intelligent patient of mine, aged 39, and a victim of multiple sclerosis. Naturally he is willing to try anything to produce a cure. Mr. de Kruif's article speaks of a mechanical "fever booster" which is now in use at the Mayo Clinic, the Cleveland City Hospital, the Milwaukee General Hospital and the Henry Ford Hospital in Detroit. The article mentions multiple sclerosis among the hopeless diseases that are being benefited. Apparently the latest, finest "hot box" is the new Vaportherm built by George H. Spencer. Can you tell me whether any patient would be justified in undertaking the trouble and expense of a course of treatment with this artificial temperature producing machine? The blood and spinal fluid Wassermann reactions are negative. Please omit name.

M.D., New York.

ANSWER.—There is probably no disease in which it is more difficult to gage the effects of therapeutic efforts than multiple sclerosis. The course of the disease is extremely chronic, and remissions and exacerbations are frequent even without treatment. Consequently, new methods are liable to meet with undue optimism when improvements arise from natural causes rather than from the method applied. Fever therapy in this disease is not founded on a rational basis but has been applied empirically, mainly with the realization that nothing else has produced results. While claims have been made that improvement has followed this procedure, facts available are not sufficient to justify much hope of success. The causative factor of multiple sclerosis is as yet unknown. While it has been alleged that a spirochete has been observed, this has not been proved and the pathologic changes are not in any way similar to those produced by the spirochete of syphilis or other invading organisms. The disease attacks primarily the myelin sheaths, causing their dissolution. The scar, or patch of sclerosis, is the terminal stage of this process and is permanent when once formed, though the loss of the myelin sheath does not necessarily mean the death of the nerve fiber. There is some evidence to suggest that this process of demyelinization results from the action of a ferment of some kind. It has been demonstrated also that some such ferments are inhibited or neutralized by quinine. On this basis Dr. Richard M. Brickner of New York has employed quinine in the treatment of patients with this disease and has reported facts which at least justify its continued application. This procedure has at least some rational foundation and is without danger other than those that belong to an idiosyncrasy to quinine.

EFFECTS OF SODIUM FLUORIDE

To the Editor:—What effect, if any, would a 1.5 per cent aqueous fluoride solution used as a moth-proofing agent on clothing, rugs and furniture have on the human body? Would it cause a dermatitis? Kindly omit name.

M.D., Connecticut.

ANSWER.—Glass etchers and embossers who use hydrofluoric acid are affected with slow healing burns and loss of the nails. The double fluoride of sodium and ammonium produces the same results. Ulcerations may develop also from the acid fumes of hydrogen fluoride evolved in the manufacture of hydrofluoric acid. Fluoride of antimony is also used as a fixative for some of the basic dyes to produce some of the brightest and fastest colors. It is questionable whether a 1.5 per cent aqueous fluoride solution used as a moth-proofing agent on clothing, rugs and furniture would cause a dermatitis. The most certain way of finding out would be to make a patch test, applying to the skin a square inch of gauze saturated with the solution and covered with rubber dam for twenty-four hours and noting the reaction, if any.

HAZARDS OF BAKELITE INDUSTRY

To the Editor:—The workmen on a job are exposed to a certain amount of inhalation hazard of a fine dust from bakelite, this dust consisting of a phenol-formaldehyde compound mixed with wood flour. Would your consulting service be able to advise me whether there would be expected to be any definite health hazard to workmen on this job and if the hazard is great enough to justify the wearing of respirators?

GEORGE S. GILPIN, M.D., Cleveland.

ANSWER.—The operation described has been carried out in a number of plants utilizing bakelite. The chief hazard appears to reside in skin irritation. Especially during the summer months a fair number of those exposed may present an occupational dermatitis, chiefly of the hands, but occasionally of the face or neck. This irritation may involve the eyes and the membranes of the respiratory tract. The wood dust is relatively unimportant, although not entirely harmless. Apparently these workers are subject to increased probability of pneumonia. The wearing of respirators in connection with this work is

attended by some difficulty, as the mechanical action of the respirator face piece is favorable to the production of a facial dermatitis. Instead, it is preferable that installation be made of spot exhaust systems at the point of origin of dust in the molding operation.

REFLEX PAIN FROM PROSTATIC URETHRA

To the Editor:—A man, aged 50, has had for three years an almost continuous and at times quite severe burning sensation on the under side of the penis just back of the corona. There is a slight redness of the skin and nothing more. He has some prostatic enlargement and has bloody seminal emissions. Cystoscopy shows a very large verumontanum, with some ulceration. The median part of the prostate bleeds easily when touched. Applications of silver nitrate to the verumontanum and prostate have helped this but the burning of the penis continues. Can you give me any information about this burning and what to do for it?

W. L. LAMBERT, M.D., Asheboro, N. C.

ANSWER.—Unless there is something more than a slight redness at the site of the burning sensation, and nothing is found in the anterior urethra at that point, the symptom can easily be explained as a reflex from the prostatic urethra. Similar reflex symptoms are quite common from that cause. Direct applications to the verumontanum do not as a rule relieve these symptoms. Much better and more permanent results are obtained by the passage of a full size sound into the bladder at weekly intervals or the use of the straight dilator into the anterior urethra, with gradual dilation till the maximum is reached. At times, instillations of weak silver nitrate solutions (from 1 : 3,000 to 1 : 500) into both the anterior and the posterior urethra with the Bangs sound syringe will be found to be efficacious.

WATER SOFTENERS AND DERMATITIS

To the Editor:—Have you any data on hand in regard water softening machines and skin diseases? I have installed in my home a Twin City water softener, which operates by running the water over a mineral. (I do not know what it is and the agents here cannot or will not tell me what it is.) Every so often the flow of water through the machine is changed and the mineral washed with salt water. This is called reconditioning and restores the mineral to its pristine purity. Now for reasons which are unimportant I have used this water to drink, being advised that it is pure. I developed a skin rash, which is almost intolerably itchy and which has baffled several skin men. I am wondering whether the water might be the cause. I have discontinued drinking it, but not enough time has elapsed to give me much result as yet. Please omit name.

M.D., Ohio.

ANSWER.—It is presumed that the chemical employed in this form of household water softening is potassium-sodium-aluminum silicate. It is believed that this chemical is or is akin to the well known trade substances, "zealite" and "permutite." "Green sand" is a widely used term designating this filtering medium. Calcium and magnesium unite with this silicate, replacing the sodium present and thus accomplishing the softening process. Through the passing of brine over the filtering bed, the bed is chemically rejuvenated.

It may be doubted whether any change in the water produced by this procedure is associated with the causation of skin disease. To an even greater extent may it be doubted that the ingestion of this water is associated as the producing factor with any skin disease.

On occasion, the use of sodium carbonate in water softening may lead to skin disease from direct contact but not from water ingestion. Waters containing arsenic have produced systemic arsenic poisoning embracing a dermatitis as one manifestation. When skin diseases are to be connected with the use of water, it is usually true that irritating soaps and other toilet articles are more to blame than the water itself.

UNILATERAL CLUBBING OF FINGERS

To the Editor:—Could you put me in touch with any information relative to clubbing of the fingers and distortion of the finger nails, occurring unilaterally? I am inclined to believe that this is an unusual condition, and if you can inform me where I can obtain any reference or literature I will be greatly obliged.

GROZBECK WALSH, M.D., Fairfield, Ala.

ANSWER.—Unilateral clubbing of the finger tips is very rare. Any case listed in this category must be of some duration, for Julius Heller (Handbuch für Haut- und Geschlechtskrankheiten, Berlin, Julius Springer **12**:278, 1927) mentions the fact that the deformity begins on one side in most cases, later involving the other extremities.

Loucaides has recently reported a case of unilateral club fingers (Einseitige Trommelschlegelfinger, *Ztschr. f. klin. Med.* **121**:724, 1932) and has found but seventeen previously recorded cases, all caused by one sided aneurysms except one, in which there was a long standing dislocation of the shoulder joint. The case reported by Loucaides was of particular interest because the deformity of the fingers, with enlargement of the hand and local nervous symptoms, did not appear until the aneurysms, which involved the aortic arch and the right subclavian artery, were complicated by a suppurative chronic bronchitis.

The deformity is due to edema of the soft tissues at the proximal ends of the distal phalanges. This lifts the proximal end of the nail and causes it to grow downward and forward over the end of the finger. The obstructed circulation results in overgrowth of horn and the nail becomes thick. The blood vessels are dilated and the lunula tends to disappear. The skin proximal to the nail is distended and glossy and this end of the nail rests on a soft cushion, on which it can be rocked by slight pressure. The whole phalanx, including even the bone in severe cases, becomes enlarged to resemble the head of a drumstick.

The literature of one sided club fingers is listed by Loucaides.

INJECTION TREATMENT OF HYDROCELE

To the Editor:—Is it practical to use sodium morrhuate, 5 per cent, to obliterate the sac of a hydrocele? The patient is an elderly man in poor physical condition. Aspirating the hydrocele causes it to refill quickly. If it is practical, please give details of technic. Please omit name.

M.D., New York.

ANSWER.—Before deciding on the injection treatment of a hydrocele, one must make certain that there is no communication with the peritoneal cavity, such as occurs in the congenital type of hydrocele, and that there is no associated inguinal hernia. The latter may become irreducible if the hydrocele is obliterated. Furthermore, a gonorrheal, tuberculous or non-gonorrheal epididymitis and a tumor of the testicle must be excluded. Such lesions might become palpable after the sac has been tapped. If the foregoing factors in producing a symptomatic hydrocele are excluded and the patient is not fit for operation, an aspiration of the sac may be done. The scrotal skin is carefully sterilized with mercurochrome or acriflavine hydrochloride, a dermal wheal is produced with 1 per cent procaine hydrochloride, and a spinal puncture needle is used to tap the sac, puncture of the testicle being avoided. The fluid should be completely withdrawn, care being taken that the needle still remains free in the cavity and is not caught in the wall of the sac. The sclerosing substance is now injected, the needle withdrawn and the site of puncture sealed with collodium.

The sac may be gently massaged to insure better distribution of the irritating substance. Solutions used for this purpose include from 0.5 to 2 cc. of pure phenol (carbolic acid) or 10 per cent quinine and ethyl carbamate solution, not exceeding 4 or 5 cc. for the first time. A 5 per cent sodium morrhuate solution is used by Porritt (*Proc. Roy. Soc. Med.* **24**:971 [May] 1931), who washes the sac first with sterile water and then injects from 4 to 5 cc. of the solution. It would seem more logical to use a 10 per cent solution for this purpose. Following the injection, the scrotal sac is supported. It may get tender and swell. A second injection is usually necessary after a week or two. Great care should be exercised not to produce an infection of the hydrocele.

VERTIGO FROM WORK WITH HANDY REPAIR CEMENT

To the Editor:—I have a patient whose chief complaint is vertigo at irregular intervals. He spends about six hours a day working and handling "handy repair cement." He informs me that this contains butyl acetate, ethyl acetate and acetone. He inhales more or less fumes during the day. Are these apt to be injurious and, if so, what symptoms do they produce?

HENRY B. SMITH, M.D., Hempstead, N. Y.

ANSWER.—The constituents of "handy repair cement" are not constant among the several manufacturers and for any given manufacturer it is probable that the formula changes from time to time, depending on market conditions. At least in times past, benzene has been much used and probably is used at the present time. If, in fact, benzene was employed as an ingredient, vertigo along with various other manifestations, such as leukopenia, is a reasonable result of exposure. If, on the contrary, the cement contains nothing more than butyl and ethyl acetates, along with acetone, extensive harm is not a prospect. The action of these substances in small quantities is usually limited to minor degrees of irritation of the eyes, skin and respiratory tract. Headache and nausea are possibilities, and the occurrence of vertigo is not beyond the bounds of expectancy.

SALT LOSS IN PERSPIRATION

To the Editor:—Will you kindly advise us as to the amount of salt required to compensate for the loss by perspiration in men in industrial plants. Also advise as to the best method of administration and also whether salt in tablet form is available and if so where it may be obtained. Please omit name.

M.D., Illinois.

ANSWER.—The practical aspects of this subject are covered in an article, "Heat Cramps in Industry: Their Treatment and Prevention by Means of Sodium Chloride" by Dr. Donald M. Glover (*J. Indust. Hyg.* **13**:347 [Dec.] 1931). Glover illustrates a machine for dispensing 16 grain (1 Gm.) sodium chloride tablets made by the McKesson-Hall Van Gorder Company, Cleveland, and the Fairway Laboratories, Belleville, Ill. Workers in the steel and aluminum industry, under extreme conditions of heat, took one of the tablets with each drink of water and usually drank two or three times an hour while doing muscular work. It is apparently safe to allow workers to eat as much salt as they feel that they require, and the material should be made completely available if the preventive measure is to be effective.

TREATMENT OF TABES

To the Editor:—Kindly outline treatment for a late stage of syphilis in a man, aged 42, complaining of imperfect erection and diminished libido. He has a three plus Wassermann reaction, rigid pupils, irregular knee jerks and some urinary incontinence. Five years ago he had a course of intravenous and intraspinal arsenicals. He was under treatment for two years under different physicians and by different methods. For the past two or three years he has had no medication. He refuses a spinal puncture because of previous painful experiences. Please omit name.

M.D., Wisconsin.

ANSWER.—The data suggest that this patient has a deterioration of the posterior column (tabes), which accounts for the pupillary changes, the incontinence and the diminished knee jerks. If he has no cardiac lesion and is otherwise in fair health, it is not unlikely that a course of malarial treatment will be of great benefit to him.

The lumbar puncture, however, should be repeated, as it is an excellent guide not only to diagnosis but as a criterion for recovery following the malarial therapy. If done properly, it should give rise to little or no pain.

MEASURING PRESCRIPTIONS

To the Editor:—I have read with much pleasure the article on the Therapy of Cook County Hospital in THE JOURNAL for June 2 but was rather surprised at the form of the prescriptions. As I read them, one dose is supposed to be contained in 4 cc. If these are administered in the wards, does it imply that doses of medicine in the wards are measured in teaspoons rather than in measuring glasses, and if they are used for outpatients why is it assumed that a teaspoon holds 4 cc.? The average teaspoon, at least in this part of the country, holds from 5 to 6 cc.

J. M. HAYMAN JR., M.D., Cleveland.

ANSWER.—The criticism is well taken. Unfortunately, the Cook County Hospital has been, up to the present, committed to the old system of weights and measures and is equipped with medicine glasses graduated according to the old one drachm equals one teaspoonful. This series represents an attempt to substitute the metric for the old system. It would be practically impossible, if for no other than financial reasons, to discard all the old measuring devices and introduce new ones; hence this compromise.

EFFECT OF COMPOUND SOLUTION OF IODINE ON BASAL METABOLIC RATE

To the Editor:—Please tell me whether compound solution of iodine (Lugol's solution) will decrease the basal metabolic rate when this increased rate is due to taking thyroid; i. e., at a more rapid rate than by simply discontinuing thyroid? Please omit name.

M.D., Virginia.

ANSWER.—The administration of compound solution of iodine has no effect on the increased basal metabolic rate caused by the taking of thyroid extract or thyroxine, in rabbits (Sturgis, C. C., and others: *J. Clin. Investigation* **2**:289 [Feb.] 1925), in dogs (Kunde, Margarete M.: *Am. J. Physiol.* **82**:195 [Sept.] 1927) or in man (Carson, D. A., and Dock, William: *Am. J. M. Sc.* **176**:701 [Nov.] 1928). This is explained by the authors last mentioned as being due to the fact that the site of action of the iodine is on the thyroid gland itself rather than on the thyroid products. However, Abelin has reported that the elevation of the basal metabolic rate caused by feeding thyroid substance to rats is decreased when diiodotyrosine is given in addition (*Biochem. Ztschr.* **233**:483, 1931; *Klin. Wchnschr.* **10**:2201, 1931).

TELEPHONE NOISES AND AUDITORY DISTURBANCES

To the Editor:—I have a patient who claims that, following the picking up of a telephone receiver and the crackling that occurs as the operator rings the number, his ear drum burst. Otoscopic examination did show a ruptured ear drum. He is at present suing the telephone company for the accident and impaired hearing. Can you cite any similar cases in medical literature? Is such an occurrence possible?

MILTON WOLPERT, M.D., Chester, W. Va.

ANSWER.—It seems rather strange that vibrations of the telephone receiver diaphragm should cause such a change in the air pressure of the external auditory canal that rupture of the drum membrane would ensue. The only reference in the literature dealing with changes in the ear due to the use of a telephone is: Moriez, A.: Auditory and Neurologic Disturbances Caused by Traumatizing Telephone Noises: The Nature of the Noises and Mode of Operation, Rev. d'oto-neuro-ophth. **2**:171 (March) 1933.

VALUE OF SYPHILIS VACCINE NOT ESTABLISHED

To the Editor:—In THE JOURNAL, April 28, page 1444, is a short abstract of an article entitled "Spirochete Vaccine in Treatment of Syphilis," from the *Dermatologische Wochenschrift.* Kindly give the status of this mode of treatment in the United States. Has it been confirmed to be effective? Please state whether that vaccine can be obtained in the United States and if so, where; if not, where can it be obtained in Germany?

AARON I. LEVIS, M.D., Madison, N. Y.

ANSWER.—The treatment in question is purely experimental. It has no definite standing in this or any other country. It has not been confirmed as effective. There is no place in this country where the vaccine used by the author mentioned in the question (Neuber, E.: Therapeutic Experiments with Living Spirochetes in Cases of Early Syphilis, *Dermatol. Wchnschr.* **98**:229 [Feb. 24] 1934) can be obtained, and so far as we know the vaccine is not for sale in Germany either.

THERAPEUTICS OF GOLD TRIBROMIDE AND OF IRON PREPARATIONS—ARSPHENAMINE AND TEETH

To the Editor:—1. I have been using gold tribromide in whooping cough. The patient's parents are so enthusiastic that I find they are renewing the prescription for all sorts of coughs. Is there any danger to the patient in a prolonged use of this drug? Is there any danger in the staining of the teeth? 2. Do the following preparations imperil the teeth: syrup of ferrous iodide; "Syrup of Cupriferrum" (Squibb)? 3. Does present medical opinion favor the ferric or the ferrous salt in the treatment of secondary anemia? 4. Is arsphenamine in glycerin, used locally for Vincent's angina, injurious to the teeth? Kindly omit name.

M.D., New York.

ANSWER.—1. No.
2. No.
3. Ferrous salts.
4. No.

TRANSMISSION OF RABIES

To the Editor:—A patient of mine was bitten by a pet dog after the dog had been given a dose of rabies vaccine. At the time the bite was inflicted the dog was quite ill as a result of the vaccination. Is there any possibility that such a bite might transmit rabies? If this is published, kindly omit name.

M.D., North Carolina.

ANSWER.—In all probability the vaccine used was killed before injection either by phenol or by chloroform and consequently there would be no danger of the transmission of rabies by the vaccine. It must be noted that in a case like the one cited the question arises whether the dog could have been suffering from rabies at the time of its bite.

PROPER CARE OF ORBIT WITH GLASS EYE

To the Editor:—I have read what you have to say on the proper care of the orbit with a glass eye (THE JOURNAL, June 23, p. 2135). Antiseptics employed in the eye will not prove of value in this case if the glass eye is several years old and should have a crevice or break in it. I have seen several cases, and securing a new eye cleared up the condition. I tried everything you mention, with no results. I would advise getting a new glass eye for that man.

J. O. CHIAPELLA, M.D., Chico, Calif.

PSITTACOSIS

To the Editor:—I note in the answer to the query on psittacosis (THE JOURNAL, May 5, p. 1521) the statement "In the majority of cases, psittacosis appears to have been transmitted from sick parrots." While this was true formerly, the cases in this country during the past two or three years have been in the majority of instances, I believe, from love birds raised in California.

STANLEY H. OSBORN, M.D., Hartford, Conn.
Commissioner of Health, State of Connecticut.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 4. Sec., Dr. W. W. Council, Juneau.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written (Group B candidates).* The examination will be held in various centers throughout the country, Oct. 1. *Oral (Group A and Group B candidates).* San Antonio, Texas, Nov. 13-16. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Sept. 8. *Application must be filed sixty days prior to date of examination.* Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Sept. 8 and San Antonio, Texas, Nov. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations in Parts I and II will be held at centers in the United States where there are five or more candidates, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEVADA: *Reciprocity.* Carson City, Aug. 6. Sec., Dr. Edward E. Hamer, Carson City.

NEW HAMPSHIRE: Concord, Sept. 13-14. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

OKLAHOMA: Oklahoma City, Sept. 11-12. Sec., Dr. J. M. Byrum, Mammoth Building, Shawnee.

PUERTO RICO: San Juan, Sept. 4. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

WISCONSIN: *Medical.* Green Bay, Sept. 11. Sec., Dr. Robert E. Flynn, 401 Main St., LaCrosse. *Basic Science.* Madison, Sept. 22. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Oregon April Examination

Dr. Joseph F. Wood, secretary, Oregon State Board of Medical Examiners, reports the written examination held in Portland, April 3-5, 1934. The examination covered 11 subjects. An average of 75 per cent was required to pass. Seven candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Rush Medical College		(1933)	85.2*
University of Illinois College of Medicine		(1933)	85*
University of Oregon Medical School		(1932)	83.7, 87.7, 89.1, (1933) 85.9, 88.3

Two physicians were licensed by reciprocity and 1 physician was licensed by endorsement from March 6 to April 4. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1932)	Utah
University Medical College of Kansas City, Missouri		(1904)	Nebraska

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Oregon Medical School		(1931)	N. B. M. Ex.

* This applicant has completed his medical course and will receive his M.D. degree and Oregon license on completion of internship.

Iowa February Examination

Mr. H. W. Grefe, director, Division of Licensure and Registration, reports the written examination held at Des Moines, Feb. 26-28, 1934. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required to pass. Fourteen candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1933)	85.1*
Rush Medical College		(1933)	88*
Keokuk Medical College, College of Physicians and Surgeons, Iowa		(1904)	75
University of Kansas School of Medicine		(1932)	82
University of Minnesota Medical School		(1933)	80.4, 85.1, 85.3, (1934) 82.3
Creighton University School of Medicine		(1933)	80.5,† 82.4, 86.6,† 88.9†
Temple University School of Medicine		(1933)	84.4†
Medizinische Fakultät der Universität Wien		(1926)	87.5‡

One physician was licensed at a special examination held May 10. The following school was represented:

School	PASSED	Year Grad.	Per Cent
Keokuk Medical College, College of Physicians and Surgeons, Iowa		(1903)	75

Seven physicians were licensed by reciprocity and one physician was licensed by endorsement from January 12 to April 12. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1932)	Illinois
University of Louisville School of Medicine		(1932)	Kentucky
Univ. of Michigan Dept. of Medicine and Surgery		(1911)	Michigan
University of Minnesota Medical School		(1930)	Illinois
University of Nebraska College of Medicine		(1925), (1932)	Nebraska
Baylor University College of Medicine		(1932)	N. Dakota

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Pennsylvania School of Medicine		(1929)	N. B. M. Ex.

* This applicant has completed his medical course and will receive his M.D. degree on completion of internship. License withheld.

† License will be issued on completion of internship.

‡ Verification of graduation in process.

Book Notices

Allergy in General Practice. By Samuel M. Feinberg, M.D., F.A.C.P., Assistant Professor of Medicine and Attending Physician in Asthma and Hay Fever Clinic, Northwestern University Medical School. Cloth. Price, $4.50. Pp. 339, with 24 illustrations. Philadelphia: Lea & Febiger, 1934.

Here is a practical handbook in allergy compiled by a student. The first chapter is an interesting historical orientation of the subject. The second summarizes the immunologic arguments. The third describes asthma clinically. In the next four chapters the author classifies, analyzes and sifts every scrap of material on the approach toward a solution of asthma. Three chapters are devoted to hay fever. It is not disparaging to say that the keystone of this arch-allergist's credo is Durham's chapter on pollen. Sheer merit makes this section stand out. It is the most concise account of the national situation thus far presented. It can be appreciated only by the practicing allergist, who finds his every quest in the clinical geographic importance of pollens now ended. Every allergist, hay fever treating doctor and patient will henceforth be indebted to Mr. O. C. Durham, chief botanist of the Abbott Laboratories, for the practical application of the mass of authoritative botanic information that he has made available so succinctly for clinical purposes. In another chapter are grouped the problem children of allergy; namely, hyperesthetic rhinitis, urticaria, angioneurotic edema, eczema, contact dermatitis, gastro-intestinal allergy, allergic headache and other possible allergic syndromes such as epilepsy, urinary disturbances, joint manifestations, eye conditions, vascular diseases and malnutrition. The author has omitted a promising method of direct nasal testing which will solve a certain percentage of cases of hyperesthetic rhinitis not benefited at present. He must learn that infantile and childhood eczema is not all food allergy. There is a distinct group on an inhalant basis. He should know that many so-called eczemas and neurodermatitides occurring with pollinosis clear under pollen treatment and that these are distinct from the pollen oil sensitive group. The last chapter is a compressed but comprehensive dry clinic illustrating the application of the allergic approach and methods of treatment.

The philosophy of such a compilation involves an overwhelming seriousness of purpose and a totally absent sense of humor. The older authorities in the subject have been too busy pushing out the borders of knowledge to write primers. However, every allergist of note has contributed to the authoritativeness of the volume, and Feinberg makes generous and systematic reference to them.

The author belongs to a group of self taught allergists. He, at least, has achieved justification for the judiciously serious mien behind which he masks his novitiate. A hypercritical attitude toward all that possesses the daring and dash of unconventional thought is the defense mechanism of the uninitiated. He seems in constant fear lest his overvalued lack of formal training betray him, and throughout the book there are qualifying clauses, half-hearted acquiescences and the "yes and then again no" point of view. The compilation is simple and elementary but eminently practical as a beginner's handbook. This book will remain the model for allergy handbooks for a long time.

Die akuten Zivilisationsseuchen: Masern, Pocken, Keuchhusten, Scharlach, Diphtherie, epidemische Kinderlähme. Ihre Epidemiologie und Bekämpfung. Von Dr. B. de Rudder, o. ö. Professor, Direktor der Universitäts-Kinderklinik, Greifswald. Paper. Price, 16 marks. Pp. 286, with 49 illustrations. Leipzig: Georg Thieme, 1934.

The purpose of this book is to summarize in a practical way existing knowledge of the modes of spreading and the prevention of measles, smallpox, whooping cough, diphtheria, scarlet fever and infantile paralysis. These six diseases are regarded as the major epidemics of our times among civilized people. On account of their high contagiousness, measles, smallpox and whooping cough are grouped together. In the spread of these diseases the patient plays the most important part by far and consequently the methods of prevention are different in some respects from those used against diphtheria, scarlet fever and infantile paralysis, in which the carrier plays the essential part in spreading the infection. The epidemiology, the endemiology and the principles and methods of preventing these diseases are discussed thoroughly and competently. The teachings are sound and progressive. The writing is rather cumbersome, with long and complicated sentences. The author does not seem to be familiar with the most recent American developments in the prevention of diphtheria and scarlet fever, but there is no doubt about his full acceptance of the fundamental principles on which the preventive measures are based. The book will interest all who are concerned with the six diseases to which it is devoted. There is no other book available at present that deals with their epidemiologic and preventive aspects in as thorough a fashion.

Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern: Die Krankheiten der Nasennebenhöhlen und des Ohres im Röntgenbild. Von Priv.-Doz. Dr. med. Richard Mittermaier, Oberarzt der Klinik. Ergänzungsband XLV, Fortschritte auf dem Gebiete der Röntgenstrahlen. Herausgegeben von Prof. Dr. Grashey. Paper. Price, 25 marks. Pp. 141, with 213 illustrations. Leipzig: Georg Thieme, 1934.

As the author himself states, this atlas is to serve not only roentgenologists but otolaryngologists who have thus far been unable to develop a wide experience with the subject of roentgenology and its results in diseases of the nasal accessory sinuses and the ear. Furthermore, it is to serve them as a basis for their own studies. The work has been developed from actual practice and is written for practitioners. With the exception of a few pictures furnished by Professor Grashey, they are all derived from roentgenograms made in the x-ray department of the university ear, nose and throat clinic at Freiburg in Breisgau. The work is divided into two sections, of which the first deals with the various diseases of the nasal accessory sinuses and the second one with those of the ear and the temporal bone. The reproductions of the films are clear, and the descriptions of the conditions found clinically are concise and informative. Accompanying the films of the nasal accessory sinuses, outlying diagrams are furnished which greatly aid in their complete understanding. There is no text other than that of the short descriptions accompanying each picture. The work is well done and should prove of great value both to roentgenologists and to otolaryngologists in their daily practice.

Les phlegmons de la loge amygdalienne: Diagnostic et traitement. Par G. Canuyt, professeur de clinique oto-rhino-laryngologique à la Faculté de médecine de Strasbourg, et P. Daull, chef de clinique oto-rhino-laryngologique à la Faculté de médecine de Strasbourg. Paper. Price, 16 francs. Pp. 137, with 35 illustrations. Paris: Masson & Cie, 1934.

This little monograph discusses, in detail, infections of the tonsillar fossa, the authors preferring that term to those of peritonsillitis or paratonsillitis. The normal and the pathologic anatomy of the tonsillar fossa are first discussed in considerable detail, and the authors lay considerable stress on the details of the supratonsillar space. The etiology of the various infections in and about the tonsils is then described. In the chapter on clinical study, attention is called to the fact that in the posterior type of infection of the tonsillar fossa there is absence of trismus. In the next section, the subject of the local complications in the pharynx, larynx and peritracheal tissues is discussed. Under the heading of "Diagnosis," the exploratory puncture of infected tissue is described. The next chapter deals with the medical treatment, including local applications of epinephrine, chloride of zinc, tincture of iodine and light scarifications of the soft palate and pillars of the fauces. The injection of electrargol is mentioned as well as that of bacteriophage. The authors also suggest, in the general medical treatment, colloidal therapy in the way of injections of collargol, electrargol, colloidal gold and omnadin (a proprietary mixture of partial antigens). They also mention injections of stock vaccines, auto vaccines, and injections of the patient's own blood. The surgical treatment consists in incision of the suppurative area or in removal of the tonsils. The latter procedure has for some time been used quite extensively by American laryngologists.

This brochure is logically and well written, and the illustrations aid greatly in the elucidation of the text. The work is timely and will well serve those who are interested in the infections of and complications involving the tissues in and about the tonsils.

A Study of the Ionization Method for Measuring the Intensity and Absorption of Roentgen Rays and of the Efficiency of Different Filters Used in Therapy. By Robert Thoræus, Fil. Lic., Kalm. Akademisk Avhandling som med Tillstånd för Vinnande av Filosofisk Doktorsgrad. Upsala. Acta Radiologica, Supplementum XV. Paper. Pp. 88, with 40 illustrations. Stockholm: F. Englunds Boktryckeri a. B., 1932.

In this monograph, Thoræus reports on some filtration properties of various metals checked against five qualities of radiation and illustrates in charts and tables his results. The efficiency of various metals as filters is discussed next and he presents data to assist one in selecting the best filter for a certain purpose. His new "tin filter" is described, which takes the place of 2 or 3 mm. of copper, producing hard radiation with the additional advantage of not decreasing the intensity. The monograph closes with some studies made in the water phantom on the relative rôles of true absorption and back-scattering. The volume is important in helping to solve many of the puzzling problems of filtration and dosage in roentgen therapy.

National Policies Affecting Rural Life: Proceedings of the Sixteenth American Country Life Conference, Blacksburg, Virginia, August 1-4, 1933. Cloth. Price, $2. Pp. 152. Chicago: University of Chicago Press, for the American Country Life Association, 1934.

The addresses reported include "World Agriculture" by Henry A. Wallace, "The National Policy Needed" by Norman Thomas, "Agricultural World Economy" by Wallace McClure, "International Debts and Monetary Policies" by Leo Pasvolsky, and "World Trade Barriers" by Lynn R. Edminister. There is a round table report on "Rural Health and Welfare" by Katherine F. Lenroot of the Children's Bureau, which states the problem and summarizes conditions and the institutions supplying medical care in rural neighborhoods. The participation of the federal government in state and local welfare services is urged.

The Chemistry of Flesh Foods and Their Losses on Cooking. By R. A. McCance and H. L. Shipp. Medical Research Council, Special Report Series, No. 187. Paper. Price, 2s. 6d. Pp. 146, with 36 illustrations. London: His Majesty's Stationery Office, 1933.

This report gives the chemical composition of cooked meat, poultry and fish. All types of cuts were used and methods of cooking suitable for each were employed. The analyses are quite complete in that they include protein and nonprotein nitrogen, fats, carbohydrates, and the elements sodium, potassium, calcium, magnesium, iron, phosphorus and chlorine. The methods of analysis used are given in detail. Among the observations made in connection with the study the following are of special interest: The losses in weight, water and salts incurred in cooking meat are the same, regardless of the temperature of the water when the meat is placed in it. The losses in salts and protein in meat roasted in an uncovered pan are appreciably less than in that roasted in a covered pan, owing to the fact that in an open pan much of the water expressed from the meat during shrinking is evaporated, leaving the salts and protein that were in solution in the expressed water concentrated at the surface of the roast. The shrinkage in meat cooked by steam at high temperature as in a pressure cooker is slightly greater than in that cooked by steam at 100 C.

A New Physiological Psychology. By W. Burridge, D.M., M.A., Professor of Physiology, Lucknow University. With a foreword by Sir Leonard Hill, M.B., LL.D., F.R.S. Cloth, Price, $3. Pp. 158, with 6 illustrations. London: Edward Arnold & Company, 1933.

This book presents a theory of the action of the nervous system. The author believes that the end organs and central neurons are rhythmic and that the problem is one of colloidal chemistry. Muscle and nerve tissue form two sources of potential energy, which are called kinesiphores. A stimulus does not detonate the nervous system but acts rather as an anabolic agent. The author holds that this does away with explanations which are dependent on the function of the synapse. He links his theory with freudian psychology particularly from the angle of the pleasure-pain principle, which he says is the functioning of the relationship between the two kinesiphores. Chapters are devoted to the relationship between this author's theory and the knee jerk, memory, dreams, convulsive states and other rather isolated psychologic phenomena. While the theory itself does not seem far fetched, the author's interpretations of the psychologic phenomena do appear naive. His book is not convincing.

The Common Diseases of the Skin: A Handbook for Students and Medical Practitioners. By R. Cranston Low, M.D., F.R.C.P., Consulting Physician to the Skin Department, Royal Infirmary, Edinburgh. Second edition. Cloth. Price, 12/6. Pp. 317, with 150 illustrations. Edinburgh & London: Oliver & Boyd, 1934.

This is a short, concise exposition of dermatology written primarily for the student. The illustrations are carefully selected and many of them are in colors. The drawings illustrating the microscopic pathology of the more important diseases have been well executed by the author himself. The text represents the clinical conception and therapeutic methods in vogue in the present-day Edinburgh school of dermatology. No attempt has been made to include syphilis, the excuse being given that this subject is adequately taken up in textbooks on venereal diseases. It is hoped that future editions will include this important subject. Medical students and practitioners will find this volume useful for a rapid review of dermatology.

Cholera: A Manual for the Medical Profession in China. By Wu Lien-Teh, J. W. H. Chun, R. Pollitzer and C. Y. Wu. Cloth. Price, $3. Pp. 197, with 24 illustrations. Shanghai: National Quarantine Service, 1934.

China is sometimes pictured as a country so backward that only a helping—or forcing—hand from the outside can bring it into the fellowship of civilized nations. No one, however, can read this book by Chinese authors on cholera (*huo-luan*) without realizing that strong forces are at work from the inside. The discussion of one of the most serious diseases in the Orient is on a high level; it is unpretentious but is lucid, accurate and well abreast of current knowledge. The importance of clean water supplies in the control of cholera is clearly recognized and other factors are discussed with complete understanding and good sense. Many Western readers will find the chapter on the history of *huo-luan* in China of particular interest.

Eine Methode zur Messung von Röntgen-, Radium- und Ultrastrahlung nebst einige Untersuchungen über die Anwendbarkeit derselben in der Physik und der Medizin: Mit einem Anhang Enthaltend einige Formeln und Tabellen für die Berechnung der Intensitätsverteilung bei γ-Strahlungsquellen. Av Rolf M. Sievert, Fil. Lic, Stockh. Akademisk Avhandling som med Tillstånd för Vinnande av Filosofisk Doktorsgrad. Upsala. Acta Radiologica, Supplementum XIV. Paper. Pp. 267, with illustrations. Stockholm: Kungl. Boktryckeriet. P. A. Norstedt & Söner, 1932.

In this monograph Sievert discusses the mathematics and physics of ionization measuring devices and from these considerations favors condenser-chamber systems, the advantages and disadvantages of which he analyzes in considerable detail. Sievert has developed many condenser-chamber measuring devices useful not only in measuring the various types of x-rays but also gamma rays. In this way the daily treatments at Radiumhemmet can be checked up and also compared with the technics used in other clinics. By the use of these condenser-chambers Sievert is enabled to measure not only surface doses but also those in the various body cavities. The consideration of the physics and construction of these chambers can be followed easily by any one having a meager knowledge of mathematics and physics. The monograph has a bibliography of 171 references, 286 studies and some photographs of these ionization chambers and their accessories and closes with tables of the energy distribution of gamma radiation. It is an excellent presentation, which should be of interest to all those whose work involves the study of doses in radiotherapy.

De la psychose paranoïaque dans ses rapports avec la personnalité. Par le Docteur Jacques Lacan. Paper. Price, 50 francs. Pp. 381. Paris: Librairie E. Le François, 1932.

This is a highly technical discussion of the subject of the paranoic psychoses, giving a lucid and exhaustive exposition of the teachings of Kraepelin, Sérieux and Capgras, Kretschmer, Kehrer, Lange and others. There is also an excellent report in detail of a case. The third and final part of the book discusses, in a manner that is admittedly speculative, the significance of the paranoid states, based mainly on a psychoanalytic interpretation of the delusional contents. The views offered are largely repetitions of authoritative statements rather than original concepts. The book will be of little interest to the general physician, but it contains much of value for the graduate student and the psychiatrist.

Medicolegal

Workmen's Compensation Acts: Hernia Attributed to Overexertion.—In the course of his employment, Feb. 4, 1932, Peterson and two fellow workmen moved a metal tank, weighing about 5 tons, along a concrete floor, by means of steel rollers placed under it and shoved forward by steel pinch bars 6 feet in length. This work required much exertion and energy in pulling and lifting. At times the bars would slip, causing strain to the bodies of the workmen. When the noon hour came, Peterson, who had theretofore been an active man and quick in his movements, was observed to leave his work very slowly. He made no statement at the time of having been injured, but his face was purple or bluish. Between 12:30 and 1 o'clock he was heard to call for help and was found in his automobile, parked nearby, sitting or lying on the back seat, with his feet over the back of the front seat. He was groaning and gave evidence of great pain. A fellow workman drove him to a hospital, where it was discovered that Peterson was suffering from a strangulated hernia. He was doubled up in pain so that he could be examined only with difficulty, his pulse was rapid, his body was cold and clammy. At the time of the operation, the hernia had increased to the size of a baby's head. The operation disclosed that Peterson had a large thin sac filled with about a quart of blood, and that about a foot or foot and a half of fairly dark bowel had descended into the scrotum. Five days later, Peterson developed a paralytic ileus and death followed. His widow instituted proceedings under the workmen's compensation act of Utah and despite the fact that neither the employer nor his insurance carrier presented any evidence, the commission found that "there was no competent evidence to establish that the decedent met with an accident or that his death was the result of an accidental injury." From a denial of compensation the widow appealed to the Supreme Court of Utah.

The only question here present, said the Supreme Court, is whether the evidence that was produced at the hearing was sufficient to justify an award of compensation. In the opinion of the court there was sufficient competent evidence of an accidental injury. Peterson's family physician, who assisted in the operation, testified that he had never treated Peterson previously for hernia and said "if I ever saw a traumatic hernia in my life that was a typical traumatic hernia." The manner in which the employee left his work, continued the court, the discolored appearance of his face at the time, the indications of severe pain and suffering when found in the automobile, and the rapidly developing hernia, all pointed directly and logically to an industrial injury as the cause of Peterson's trouble. The declarations and statements made by the deceased to his physician, before the operation, that he was

lifting on a boiler five or ten minutes before he left work and while lifting felt "terrible pains," were admissible under the rule stated in 3 Jones Comm. on Evidence (2d Ed.) 2234:

> Where it appears that the physician testifying was called by the injured person in his ordinary professional capacity and for purposes of securing relief from pain and for medical treatment, and there are no circumstances casting suspicion on the genuineness of the utterance, all statements of symptoms and sufferings, whether past or present, and though involving statements as to the nature of the accident, if necessary to diagnosis by the physician, may be testified to by him. On the other hand, where a physician examines an injured person for the express purpose of testifying as to his physical condition, even declarations of present pain made by the patient to the physician have been held inadmissible.

To establish the fact of a traumatic hernia, it was contended, it was necessary to show that the injury caused immediate disability by reason of pain at the time of the accident, and that where the accident is followed by a later development of hernia, the accident must be regarded as the occasion rather than the cause of the injury. But, said the Supreme Court, in the present case the effect was immediate. It was no less immediate because the condition of the deceased grew progressively worse during the two hours between noon and the time the operation was performed. The medical testimony indicated a traumatic strangulated hernia of recent origin. There was nothing to indicate that Peterson had a previous hernia or that there were other predisposing causes. That overexertion may cause accidental injury or death, continued the court, is no longer open to serious question. The only reasonable or permissible inference from the evidence in this case is that the hernia was caused by strain or overexertion while moving the tank. The court accordingly set aside the findings and the decision of the commission and remanded the cause for further proceedings.—*Peterson v. Industrial Commission of Utah (Utah), 27 P. (2d) 31.*

Malpractice: Liability for Roentgen Burn.—No presumption, says the Court of Appeals of the District of Columbia, of want of skill or care ordinarily arises from the fact that medical treatment is unsuccessful. But evidence that a physician administered roentgen treatment to a patient without remaining in the room or within hearing, which treatment resulted in a burn, warrants a finding of negligence, unless satisfactorily explained. It is for the jury to determine the issue from all the evidence presented. In such a case it constitutes error for the trial court to direct the jury to return a verdict for the defendant-physician.—*Grubb v. Groover (District of Columbia), 67 F. (2d) 511.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Sept. 9-14. Dr. William P. Wherry, 107 South 17th Street, Omaha, Executive Secretary.

American Association of Railway Surgeons, Chicago, August 20-22. Dr. Louis J. Mitchell, 21 East Van Buren Street, Chicago, Secretary.

American Congress of Physical Therapy, Philadelphia, Sept. 10-13. Dr. Nathan H. Folmer, 921 Canal Street, New Orleans, Secretary.

American Public Health Association, Pasadena, Calif., Sept. 3-6. Dr. Kendall Emerson, 50 West 50th Street, New York, Executive Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 19-22. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.

Idaho State Medical Association, Lewiston, Sept. 7-8. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Michigan State Medical Society, Battle Creek, Sept. 12-14. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

National Medical Association, Nashville, Tenn., August 13-18. Dr. C. A. Lanon, 431 Green Street, South Brownsville, Pennsylvania, General Secretary.

Nevada State Medical Association, Reno, Sept. 21-22. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

Northern Minnesota Medical Association, Brainerd, Sept. 10-11. Dr. Oscar O. Larsen, Detroit Lakes, Secretary.

Pacific Northwest Orthopedic Association, Seattle, Sept. 1. Dr. J. C. Brugman, 1215 Fourth Avenue, Seattle, Secretary.

Western Branch of American Public Health Association, Pasadena, Calif., Sept. 3-6. Dr. W. P. Shepard, 600 Stockton Street, San Francisco, Secretary.

Washington State Medical Association, Spokane, Sept. 10-13. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Wisconsin, State Medical Society of, Green Bay, Sept. 12-14. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

MISSOURI STATE MEDICAL ASSOCIATION

Seventy-Seventh Annual Meeting, held in St. Joseph, Mo., May 7 to 10, 1934

DR. W. L. ALLEE, Eldon, in the Chair

The Management of Blood Diseases

DRS. J. H. MUSSER and D. O. WRIGHT, New Orleans: Instead of grouping the so-called blood disorders on the basis of the etiology, the morphology of the blood cells or any other accepted classification, we have presented as a group certain blood disorders that are benefited by several forms of therapy: 1. Blood conditions benefited by vitamin therapy: pernicious anemia, sprue and pernicious anemia of pregnancy, three conditions which are alleviated by vitamin B_2 therapy. 2. Blood conditions benefited by drugs: four anemias that are materially helped by the administration of iron in full and adequate doses —idiopathic hypochromic anemia, normocytic anemia, simple microcytic anemia and the anemia of pregnancy; here also is listed polycythemia vera, which may be treated successfully with phenylhydrazine, agranulocytic angina, which apparently may be cured by pentnucleotide, and hemophilia, which is included for the purpose of discussing a form of treatment which we do not think beneficial. 3. Blood conditions benefited by radium or roentgen therapy: the two types of chronic leukemia that definitely are ameliorated by irradiation; this physical measure does not produce a cure but does relieve symptoms for a time at least and prolongs life. 4. Blood conditions benefited by splenectomy: three genetically dissimilar dyscrasias of the blood, which, however, are to all intents and purposes cured in many instances by removal of the spleen. These various therapeutic measures may not be curative in the sense that they remove the underlying cause, but at least they are definitely capable of relieving the patient.

Fibromas of the Small Intestine with Intussusception

DRS. WALLIS SMITH and GUY D. CALLAWAY, Springfield: In two cases of fibromas of the ileum the symptoms and the clinical examination suggested acute intestinal obstruction. Intussusception was present in each and the tumor was found in the distal portion of the telescoped bowel. One of the patients gave a history of lower abdominal pain, cramping, distention and constipation for a period of several months before intussusception occurred. The onset of symptoms in the other case was sudden and acute but diminished after a few hours. Resection of the intussuscepted portion of the bowel was done in the first case but only ileotomy was required in the second. Microscopic examination showed the tumors to be fibromas. The patients recovered. Thirty-eight instances of fibromas of the small intestine were found in the literature. Some of the tumors were discovered at autopsy but most of them were discovered during operation for acute intestinal obstruction. Intussusception was the usual complication producing a complete occlusion of the bowel. Diagnosis is difficult. Roentgen therapy offers the best possibilities but at this time it is seldom possible to differentiate occlusion due to intraluminar tumors from obstruction due to other lesions. A correct diagnosis is usually made at the time of the operation but all intestinal tumors should be examined microscopically. The only treatment required in uncomplicated cases of fibroma of the small intestine is ileotomy and removal of the tumor and its base. If an irreducible intussusception is present or gangrene has developed, resection of the bowel is necessary. The mortality rate after ileotomy is low. It increases in the group of cases in which resections are done, being greatest in the group of patients in whom gangrene develops prior to operation.

Tertian Malaria with Unusual Type of Skin Manifestations

DR. A. GLENN DAVIS, Kirkwood: A white girl, aged 3 years, seen Sept. 9, 1933, had had apathy, weakness, loss of weight and anorexia for six weeks. Chills, rises of temperature and diarrhea had appeared, three weeks previously. The parents had given the child patent remedies and the chills ceased after two weeks, but the occurrence of fever at intervals of forty-eight hours, as well as severe diarrhea persisted. Blebs, about 6 mm. in diameter, appeared September 9 and were distributed

over the entire body excepting the soles and the palms. No papules or pustules were seen at any time. To the naked eye, the small round lesions resembled the microscopic appearance of stained small lymphocytes except as to color. The dark portion of the lesions, corresponding to the nucleus of a stained cell, was red. It was in the center and located deeply under the thin epidermis overlying the lesions. The periphery of the lesions, corresponding to the cytoplasm of a stained lymphocyte, was light in color and narrow. The lesions were filled with a colorless serous fluid. The blood smear showed innumerable plasmodia. The hemoglobin was 70 per cent. The urine showed a faint trace of albumin and numerous pus cells. Atabrine was given in the recommended dosage. The diarrhea was checked after a period of twenty-four hours. The skin lesions disappeared by a gradual decrease in the size and in the depth of color until by end of the fifth day only smooth pink areas marked the sites of the lesions. There was no fewer after the second day of treatment. The first impression was that the patient might have hemorrhagic smallpox. Closer observation of the lesions, however, revealed the absence of umbilication. In December I saw the patient again and found that there was marked and conspicuous pitting where the lesions had been, especially in the regions of the face and neck. That the lesions were definitely a manifestation of the malarial infection is borne out by the prompt response to specific therapy.

Thyroidectomy for Heart Disease

DR. JULIUS JENSEN, St. Louis: Of late, considerable attention has been paid to thyroidectomy for heart disease. The procedure was initiated in 1932 in Boston by Blumgart and his co-workers and is based on the fact that the rate of metabolism is governed by the thyroid gland. If the thyroid gland is removed the metabolic rate is lowered. The lowering of the metabolic rate results in a diminished demand for oxygen by the tissues and thus the demands on the circulation are lessened. While a damaged heart may not be able to carry the full circulatory load of a normal metabolism, it may be able to carry comfortably the load of a lowered metabolism. Thus it may be possible to obtain adequate circulation with a damaged heart by removing the thyroid gland. The preliminary reports from Boston were so promising that the procedure seemed worthy of trial elsewhere. During the last six months Dr. Allen and I have studied a number of cases of heart disease with a view to thyroidectomy for the cardiac condition. Our results have been as promising as those reported from Boston, but the method is still so beset with difficulties that it can not yet be considered safe.

Treatment of Angina Pectoris of Effort by the So-Called Cardiac Hormones

DR. J. CURTIS LYTER, St. Louis: Heberden, in his masterful description of the angina pectoris of effort, described a patient who was able to prevent his angina by sawing wood for one-half hour each morning. Demoor of Belgium, Haberlandt of Innsbruck, Zwardemaeker and Zuelzer almost simultaneously conceived the idea that in the skeletal muscles during activity there is produced a substance capable of dilating the coronary arteries. The dilation of the coronary arteries seems to be necessary to supply the cardiac muscle with an adequate quantity of blood during muscular exercise. These authors also believed that during exercise a substance is produced in the liver and pancreas which can not only dilate the coronary arteries but can simultaneously regulate the myocardial contraction, tonicity and conduction. Zuelzer produced a substance from the liver called eutonon; Frey and Kraut isolated a substance from the human urine after exercise. They considered it to be of pancreatic origin and named it padutin. Using the skeletal muscles of a calf, Fahrenkamp and Schneider produced a substance which they named lacarnol. Schwartzmann applied the name myaston to a substance which he produced from the same source. Zwardemaeker produced a substance from the heart muscle and called it automative. He recovered what he thought was a similar substance from the circulating blood. These substances have been called "cardiac hormone" in continental Europe. Apparently, no two investigators agree regarding the chemical constitution of the substances, which have been considered to derive their action from the intermediary products of nuclear metabolism, from their content of histamine and from their content of adenosine. All investigators agree that they produce a dilatation of the coronary arteries, and an increase in cardiac tonicity.

I have treated twenty-one patients for angina pectoris since August 1933. Seventeen of the number had angina pectoris of effort and four had angina pectoris of decubitus. The patients were given intravenous injections of 1 cc. of padutin daily for from thirty to sixty days. Simultaneously 30 drops of lacarnol was administered three times each day. The patients suffering with angina pectoris of effort were made to exercise in the way of walking after receiving treatment for periods of from ten to twenty days. The walking was stopped with the onset of the least pain. In this way the walks were increased until the patients were able to walk from 3 to 5 miles each day. When this stage was reached, the padutin was administered only twice each week. After a few weeks, both the padutin and the lacarnol were discontinued and the patient was instructed to continue walking for from 3 to 5 miles daily the remainder of his life.

Of the seventeen patients treated for angina pectoris of effort, thirteen have been completely relieved and are now able to walk any distance without anginal pain. Four patients have slight anginal pain after walking one or two blocks. This ceases immediately with rest, following which they can walk for any distance with no discomfort. Of the four patients presenting angina pectoris of decubitus, each has shown marked improvement. They do not have angina while they are at rest but they do experience angina on various degrees of exertion. I feel that by means of the correct use of the cardiac hormones combined with graduated, closely supervised physical exercise, the majority of patients with angina pectoris of effort can be completely relieved of pain, and the majority of patients with angina pectoris of decubitus can be greatly benefited.

Skin Testing in Allergic Conditions

DR. HERBERT J. RINKEL, Kansas City: Skin testing has generally been accepted as the means of determining the substances to which the patient is sensitive. However, as the knowledge of allergy has increased it has become evident that this procedure is not adequate to discover the etiologic factors. The result has been that some workers have discarded skin testing; others have limited themselves to the use of a selected group of allergens or have sought aid in such measures as elimination diets. Skin reactions occur as the result of contact between a specific allergen (testing extract) and the cellular fixed antibodies in the skin. These antibodies have the ability to sensitize the skin of the nonatopic individual as well as the patient's skin and thus they make indirect testing possible. Skin sensitization is a variable factor, not only in different areas but in the same location over a period of time. It often precedes constitutional sensitivity and may persist after the clinical manifestations of allergy have ceased. Skin testing is further complicated by the number of shock organs that have sensitized the skin to one or more allergens. These allergens have a high degree of specificity for one or more of the various localizations of sensitization. Skin testing cannot be used to determine the presence, the degree or the localization of an allergy. If one will correlate the results of the clinical and laboratory examinations in a large series of cases it will be found that the value of skin testing lies in the average of accuracy, which varies with the different manifestations, being greatest in seasonal hay fever patients.

Acute Allergic Abdomen (a Preliminary Report)

DR. L. P. GAY, St. Louis: Recent observations by Rowe, Reichet and Vaughn indicate that gastro-intestinal allergy may prove to be the most common manifestation of allergy. The symptoms may be mild or violently acute and may occur with other manifestations of allergy, but at times the abdominal symptoms occur alone. Acute abdominal pain simulating an acute surgical condition of the abdomen has been observed frequently with Henoch's purpura and numerous cases of this type have been treated surgically. The same type of pain has been described in association with other erythematous skin diseases in which urticaria and angioneurotic edema have been included. Abdominal pain has been produced by an overdose

of desensitizing pollen extract, absorption through skin abrasions and food ingestion. The paper deals with allergic episodes including abdominal pain, muscular spasm, elevation of temperature and an instance of leukocytosis. The diagnoses were made by the history and by extra-abdominal symptoms as well as by the physical examination of the abdomen, as ordinary methods of examination and laboratory procedures are of little help. The patients observed made complete recoveries without operation and their symptoms have been reproduced intentionally to make the proof of the condition certain.

Treatment of the Underprivileged Patient with Diabetes

DR. T. L. HOWDEN, St. Joseph: This group outranks in number any other suffering from the disease. Hospitalization and elaborate equipment are unnecessary in the treatment of diabetes, because the majority of patients with the disease may be managed satisfactorily by the general practitioner. Quantitative analysis of the twenty-four hour urine specimen tells the story and only occasionally is it necessary to determine more than one or two blood sugars.

The basal caloric requirement represents the number of calories used in the trial diet and is determined by the Boothly and Sandiford chart. In proportioning carbohydrates, proteins and fats, 1 Gm. of protein per kilogram of body weight is used. The carbohydrates are placed at from 80 to 90 Gm. and any number included between these two may be selected arbitrarily. The fats are then found by simple subtraction.

A quantitative order blank for diabetic menus may be secured from any standardized hospital; according to this blank the carbohydrates, proteins and fats are distributed for breafast, dinner and supper. In writing the patient's menu it will be necessary to convert grams on the order blank to their equivalent measures on the menu. This is important, as these patients will not use scales properly.

The United States Department of Agriculture furnishes standard food tables with weights and their equivalent measurements. The patient's menu is simple and tells him what to eat for breakfast, dinner and supper in terms of standard portions such as cupfuls and tablespoonfuls. The patient is also given a food list of 3 per cent vegetables, 6 per cent vegetables, 10 per cent fruits and the various other groups. Each article of food in these different groups is accompanied by the portion that he may use. The amount of sugar present in the twenty-four hour specimens of urine serves as a guide to the patient's progress. For a quantitative test of the sugar in the urine 8 drops of urine is added to 1 drachm of Benedict's solution and heated for five minutes in a cup of boiling water. The formation of a green color means that less than 1 per cent of sugar is present. The formation of a yellow color indicates from 1 to 2 per cent, and a red color indicates 3 per cent or more of sugar. This test has proved of sufficient accuracy to be used as a substitute for the more technical methods.

Interpretation of Shadows in Urogram

DR. OTTO J. WILHELMI, St. Louis: The purpose of this presentation is to demonstrate that frequently perplexing conditions simulating calculi in the urinary tract are encountered and with meticulous examination they proved to be caused by other factors. Statistics show that but 5 per cent of renal calculi are demonstrable roentgenographically. It is not unusual to see shadows in the lower third of the ureter which are not caused by urinary calculi but by phleboliths or calcified extraperitoneal lymph glands. In such cases the only means of accurate diagnosis is retrograde catheterization, the catheter coming in contact with the stone in its passage toward the pelvis or meeting with a complete block at the point where the calculus has lodged. Stones occurring in the pelvis or cortex of the kidney may remain there for years with no renal destruction or pain as long as sufficient drainage occurs to prevent backflow pressure. This "silent" type of stone is most frequently diagnosed by chance in roentgen examinations. Disease conditions of the gallbladder and appendix may simulate right-sided ureteral colic. Severe ureteral colic was formerly believed to be caused by traumatization of the ureteral wall by the descending calculus, but today urologists have proved that the pain is due to obstruction resulting in a dilated pelvis and subsequent hydronephrosis. This fact is demonstrated by the relief afforded the patient when it is possible to manipulate a catheter past the blocked area and to drain the dilated pelvis.

An x-ray ureteral catheter is one's best ally in rendering a differential diagnosis between ureteral diseases of the stone, appendix and gallbladder, and phlebolith. One should always bear in mind that occasional intramural stones occur which will permit the catheter to pass without obstruction and for that reason are misleading. Shortly after the stone becomes lodged it traumatizes the ureteral mucosa and a stricture forms at this point with a dilatation of upper portion of the ureter. It is also possible for dilatation to occur below the point of stricture, apparently the result of an inflammatory loss of tone of the ureteral wall. The lower third of the ureter, especially the intramural portion, is an exception to the rule of dilatation. In these cases the ureter is more apt to become narrowed, owing to the increased amount of musculature and the edema of the surrounding tissues. On this type of case the cystoscope is a diagnostic aid and reveals a puffed, edematous ureteral orifice with marked ecchymosis of the vesical mucosa. Most ureteral calculi are found in the lower third of the ureter. They seldom remain long in the upper two thirds migrating rapidly toward the bladder.

The Blood Platelet Count in Postoperative Thrombosis

DRS. R. B. H. GRADWOHL and SAMUEL J. HELLER, St. Louis: In a series of thirty-one cases, including twelve herniotomies, two cholecystectomies, fourteen pregnancies, six miscellaneous operations, one hemorrhoidectomy, five hysterectomies and two normal individuals, we found that a rise in blood platelets occurred in many patients following operations, particularly herniotomies. We could not draw any conclusions regarding the relationship between postoperative thrombosis and the blood platelet count owing to the fact that none of our cases studied presented a thrombosis during the course of the daily serial blood platelet counts. It seems probable, however, that there is a rise in blood platelets after certain operations. Whether an increase in blood platelets is the sole factor in thrombosis or a contributing factor could not be established.

Carcinoma of the Prostate

DR. GEORGE H. EWELL, Madison, Wis.: Carcinoma of the prostate accounts for a large percentage of the cases admitted to any active urologic service. In less than 5 per cent of the cases when first seen is the disease confined to the gland. The early tendency toward lymphatic and osseous metastasis makes early diagnosis very desirable. The fact that carcinoma may arise in any portion of the gland and not merely in the region beneath the posterior capsule only is of importance for early diagnosis. Carcinoma occurring in younger persons develops more rapidly and gives rise to earlier metastases than in older persons. Urinary symptoms usually lead the patient to consult his physician; pain in the pelvis and about the hips is the second most common symptom, the pain being due to lymphatic and perineural lymphatic metastases. Roentgen examination will reveal osseous metastases in a large percentage of the cases when they are first seen. Lymphatic and osseous metastases may exist without producing pain. Roentgen examination of the bones of the pelvis and the lower spine should be made as a routine in all suspected cases of carcinoma of the prostate. A careful examination of the prostate is the greatest resource in the diagnosis. However, the aspiration biopsy (technic of Ferguson) should be more widely employed. The results of treatment generally are still rather unsatisfactory. Interstitial irradiation, after the newly described method of Ferguson, and the radical operation of Young would probably be adequate for eradication of the lesion in many of the cases, provided they could be seen early. The public should be educated to annual physical examinations.

Chronic Prostatitis

DR. DAVID B. STUTSMAN, St. Louis: In this clinical group I have considered only those cases which give definite subjective symptoms. These symptoms are more commonly pain and burning in the perineum or rectum, burning frequency or pain at intervals on urination, and various sex disorders. The latter symptom particularly has led this group frequently to

be classified as sexual neurasthenia. In such a patient the prostatic urethra from the verumontanum to the vesical orifice is intensely inflamed, usually with some fibrosis or contracture. It is largely from this source that the symptoms are derived; and while massage dilation and instillation have proved beneficial, the relief in many instances has been unsatisfactory. Monopolar fulguration to the prostatic urethra, particularly around the verumontanum, has in many cases seemed to give more decided relief. In two cases showing this syndrome, the age of each being such that early hypertrophy might be present, resection of a moderate amount of tissue at the vesical orifice was done and some surface coagulation carried down into the prostatic urethra. The result was beneficial in each instance. Four other patients ranging in age from 32 to 40 were treated in the same manner. Two have shown complete relief and two relieved entirely except for some remaining sexual complaint. The comparative simplicity of the procedure with apparent results seems to warrant its trial in preference to the more radical drainage of prostate and vesicles.

Pararectal Fistula

DR. W. K. MCINTYRE, St. Louis: The pararectal fistulas are of three types: (1) the blind internal pararectal, (2) complete pararectal, and (3) bilateral pararectal. The surgical treatment of a pararectal fistula differs from that of other fistulas, because of the anatomic relation of the main fistulous tract to the muscles controlling the anal outlet. If the surgical principle of laying open the tract from the external to the internal opening should be applied in this type of fistula, in which the internal opening is above the level of the levator ani, not only would both sphincters and the muscular coats of the rectum be divided, but also the point of fusion of the levator ani with the external muscular coat of the rectum. This is of great importance, because incurable incontinence results. The incision should be through the tissues on the outer side of the main fistulous tract to the point where it passes through the wall of the rectum.

Management of Hyperthyroidism

DR. E. V. MASTIN, St. Louis: The general term hyperthyroidism includes two separate and distinct diseases: exophthalmic goiter and toxic adenomas. The signs and symptoms of the two diseases may be so similar that a differential diagnosis is difficult. Hyperthyroidism plus dysthyroidism is present in the case of exophthalmic goiter, while uncomplicated hyperthyroidism, which can be reproduced experimentally by the administration of thyroid extract, accompanies the toxic adenoma. The cause of exophthalmic goiter is unknown.

Recurrence of hyperthyroidism is encountered in not more than 5 per cent and probably less than 3 per cent of all the patients on whom conservative double resection of the thyroid gland has been performed. Any assumption that inadequate surgery is the most frequent cause of recurrence disregards the fact that there may be recurrence of the stimulus that was the original cause of the disease. The nature of the latter is as yet a matter of speculation.

The cooperative management of patients with toxic goiter, whereby throughout the entire period of observation they are under the joint supervision of the internist and the surgeon, has greatly reduced the mortality.

The introduction of the use of compound solution of iodine in the preoperative preparation of patients with exophthalmic goiter has been the most momentous single advance in the surgical treatment of diseases of the thyroid since the advent of aseptic surgery. In cases of toxic adenoma, iodine seldom causes the marked improvement seen in cases of exophthalmic goiter. Compound solution of iodine will not cure exophthalmic goiter and its indiscriminate use is both dangerous and unscientific. It should be used only as a preoperative and postoperative adjunct and during hyperthyroid crises. These patients are put to bed as a routine procedure with an icebag over the precordium. They receive from 4,000 to 5,000 calories of food daily and from 3 to 4 quarts of fluid during twenty-four hours. It is advisable to administer a sedative and I prefer one of the barbital preparations, such as pentobarbital sodium or phenobarbital, given in doses of from ½ to 1½ grains (0.03 to 0.1 Gm.) three times a day and at bedtime. Usually 10 drops of compound solution of iodine is given in milk or cocoa three times a day between meals.

The glycogen reserve of patients with degenerative changes in the liver, as evidenced by the phenoltetrachlorphthalein retention test and those with diabetes mellitus, may be materially increased by preoperative preparations, in the first group, by the intravenous injection of 10 per cent dextrose in sodium chloride solution, in the second group by a diet high in calories and rich in carbohydrates, supplemented by adequate insulin to make possible the utilization of the food.

The essential technical features of the operation for goiter are (1) the removal of the excessive thyroid tissue with a minimal loss of blood and the least possible trauma to the contiguous structures, (2) the preservation of sufficient glandular tissue to maintain the basal metabolism within normal limits and (3) the maintenance of strict asepsis. Postoperatively, restlessness and pain are controlled by the rectal administration of 1½ grains (0.1 Gm.) of pentobarbital sodium in 10 cc. of saline solution every four hours and whenever it is necessary morphine from 1/6 to ¼ grain (0.01 to 0.016 Gm.) is given. The patients are kept very quiet for the first forty-eight hours, and a fluid intake of 3,000 cc. is maintained by giving sufficient saline solution by hypodermoclysis and 10 per cent dextrose solution intravenously. Should a severe crisis develop, the patient is given increasing doses of compound solution of iodine in saline solution by hypodermoclysis or large doses of sodium iodide are given intravenously. A 10 to 20 per cent solution of dextrose is given by continuous venoclysis and nine or ten icebags are placed over the precordium and around the abdomen and the thighs. Blood transfusions are indicated at times. The oxygen tent is also a great aid.

Experimental Production of Fat Necrosis

DR. M. PINSON NEAL and MAX M. ELLIS, PH.D., Columbia: Langerhans in 1890 produced the first experimental necrosis of fat and expressed a belief that lipase was the causative factor. Since that time Opie, Wells and others have, as the result of experimentation, voiced the same assumption, but none of them have produced the proof. We were able to produce fat necrosis by the use of a concentrated lipase fraction obtained from the liver and pancreas of hogs and commercial pancreatin. In the literature there is an expression of general belief that lipase causes the splitting of fat after some other ingredient of the pancreas, possibly trypsin, has injured the cells. Since there was a question of trypsin being present in these animal tissue extractives, a source of material was sought that would be free of such substances. Extractives were prepared from the seeds of the common sunflower, unroasted Virginia peanuts, castor beans and Chinese soybeans. The lipase-containing fractions obtained from these substances were potent in the production of fat necrosis and gave chemical and physical reactions for the enzyme lipase. These fractions were negative in the usual tests for trypsin and other proteolytic enzymes. The lipase-containing fractions have been used as intraperitoneal injections into 625 animals, including white rats, dogs, cats, turtles, fish, chickens, pigeons and water dogs. Fat necrosis has been produced in each of these except the water dog, only five animals of which type have been used. Experimental lesions of fat necrosis have been observed within six hours after injections of the substances. The condition is not fatal, though the factor which produces fat necrosis is often fatal.

Diagnosis of the Childhood Type of Tuberculosis

DR. H. L. MANTZ, Kansas City: The childhood type of tuberculosis is that form of the disease characterized by primary single or multiple foci, with metastasis usually limited to the lymphatic system. The principal aids in the diagnosis are the history of exposure, the tuberculin reaction and the roentgen examination. Symptoms of infection may be present but they are not pathognomic of tuberculosis and hence are of no diagnostic help. Physical signs are lacking except in a few cases. The Mantoux or intradermal test, with Koch's old tuberculin, is the best method to use for the tuberculin test. If only one injection is used, 0.1 mg. or 0.1 cc. of 1:1,000 should be used. It is preferable to use graduated doses, beginning with 0.01 mg. It is unnecessary to use larger doses than the 1 mg. As a qualitative test the Mantoux

method is accurate. It can be used as a quantitative test in two ways. The doses may be varied from extremely small ones to those above a milligram, or the dose may be kept constant and the reactions measured. It is not yet safe to draw too definite a conclusion from the quantitative tests.

The chests of the patients in whom a positive reaction to tuberculin is noted should be subjected to roentgen examination. A large percentage will show no roentgenographic evidence of infection. Less than 5 per cent will show recent lesions. Interpretation of these films is not easy. Shadows cast by blood vessels are often diagnosed as calcium deposits. These are usually irregular in outline and density, while blood vessels are more homogeneous and have rounded borders. The classification of the patients has been done almost exclusively by roentgenograms. This practice sometimes leads to errors.

The laboratory has been neglected in the diagnosis of the childhood type of tuberculosis. Sputum may be recovered by gastric lavage and examined by the usual methods. Various blood examinations, such as erythrocyte sedimentation rates, leukocyte, lymphocyte and monocyte counts and ratios are used for diagnostic and prognostic purposes. Most of the tests are of value in the prognosis but are not to be relied on as diagnostic measures. Tuberculosis may simulate or be simulated by many diseases incident to childhood. Differential diagnosis is made by direct methods and by exclusion.

The Treatment of Childhood Tuberculosis

DR. HARRY CALVIN BERGER, Kansas City: For decades the treatment of tuberculosis has been rest, food, fresh air and sunshine. Isolation is the one factor that has been added. Great strides have been made, however, in the technic of applying these measures, especially in the domains of orthopedic and thoracic surgery. The greatest advance has been in education and the development in both the profession and the lay public of a sane comprehension of the problem. In the treatment of tuberculosis in children, physicians must have the proper conception on the following points:

1. We are dealing with the individual in the springtime of life when growth is rapid, changes are swift and reaction differ from those encountered in later life.

2. We must differentiate clearly between the childhood type and the adult type, which is rare early in life.

3. We must fully realize that reinfection of an infected child is far more dangerous than the infection of a child not previously infected.

4. Diagnosis must not wait for the development of physical signs; it can be made early only by the skin test and the roentgenographic examination.

5. The history is of utmost importance.

6. Isolation from contacts wherever possible is the ideal.

In applying treatment, rest is of first importance. It should be applied with common sense with the child's cooperation and must be mental as well as physical. It may cause damage if overdone. The child's psychology must be considered. The air should be fresh and free from dust, fumes or soot. It should be plentiful and acquired without undue exposure or exertion. Sunlight and other forms of ultraviolet radiation may prove disadvantageous through overindulgence. The diet should be wholesome, balanced and rich in vitamins and proteins; it should never be forced. I administer reinforced cold liver oil and calcium with phosphorus (preferably a phytin) to my patients. I am not using Calmette's immunization.

Pneumothorax Treatment of Tuberculosis

DRS. A. C. HENSKE and CHARLES W. EHLERS, St. Louis: In all unilateral cases the following are the indications for pneumothorax treatment: (1) if there are constant râles to be heard over an area corresponding to two or more ribs or intercostal spaces accompanied by positive results from the sputum and roentgenographic examinations; (2) if the disease is acute; (3) if in spite of rest in bed the activity of the process persists or improvement is not satisfactory; (4) if the patient for any reason is unable to undergo prolonged hospitalization; (5) if there is repeated or severe hemoptysis or hemorrhage; (6) if there are cavities with copious secretions; (7) if certain complications, such as tuberculous laryngitis, should be present; (8) if there is massive atelectasis or massive fibrosis. In bilateral cases the same indications are employed, influenced somewhat by the condition in the contralateral lung. The literature shows that highly favorable results are obtained in a majority of statistics quoted. Notably among these are Bonzoni's series of 3,680 cases treated during the period between 1916 and 1925. Of this total, 25 per cent were described as cured, 27.1 per cent as improved and 31.2 per cent as having ended fatally. Of Matson's 423 cases, 32 per cent were described as clinically cured, 20 per cent as arrested, 16 per cent as unimproved and 22 per cent as having ended fatally. Our experience with pneumothorax treatment at the Mount St. Rose Hospital from 1929 to 1933 is similar to the quoted statistics as regards favorable results. Of 1,156 patients admitted during the period of five years, 185 (16.01 per cent) received artificial pneumothorax. This low percentage can be attributed to the fact that practically 96 per cent of our patients are in the second and third stages of the disease when they are admitted to the hospital.

The best results are obtained in the group in which the involvement is unilateral, and there are no adhesions to interfere, and in bilateral cases in which less than a third of the contralateral lung is involved. The immediate effects are compression and rest of the diseased lung. Resulting from this, in many instances, are closures of cavities, stimulation of fibrosis and reduction in the extent of the involved area. This treatment also has a marked effect on the temperature and sputum; in ninety-eight, or 53 per cent, of the patients the sputum, which had been positive, became negative and 123 patients, or 66 per cent, became afebrile.

Ocular Complications of Gonorrhea

DR. CHARLES M. SWAB, Omaha: Gonococcic infection of the ocular tissues is ordinarily a complication of gonorrhea of the genito-urinary tract. The treatment that has been found most effective in cases of ophthalmia neonatorum consists of (1) compresses of iced boric acid solution for three minutes every two hours; (2) warm boric acid solution irrigations every two hours; (3) instillation of fresh 15 per cent mild silver protein every two hours; (4) application of sterile petrolatum on the lid edges every two hours. These measures were usually supplemented by foreign protein therapy. Fresh whole milk, boiled for four minutes, was injected into the gluteal region in doses of 0.5, 1 and 1.5 cc., respectively, on three successive days. Fourteen cases were cured without corneal involvement. Gonorrheal ophthalmia in adults is likely to yield corneal complications; the hazards to vision are greater than in ophthalmia neonatorum. Metastatic gonorrheal iridocyclitis may develop from a focus in the posterior urethra; it is characterized by a plastic exudate and a tendency to recur.

Nasal Allergy

DR. ORVAL R. WITHERS, Kansas City: Nasal allergy is the most frequent manifestation of the atopic state. It is an important consideration in all chronic conditions of the nose and sinuses. In most cases the symptoms are definite enough so that they may be classified as the seasonal or perennial type. The perennial type may be further subdivided into the intermittent and the continuous forms. In addition there is a large and somewhat confusing group composed of patients with mild nasal symptoms, which may or may not be complicated with infection. Foods, inhalants or bacteria may become the etiologic factors. Too much emphasis has been given to infection as an allergen in many instances because of the absence of skin reactions and the benefit to be derived from vaccine therapy. The characteristic symptoms are nasal obstruction, rhinorrhea, sneezing and itching of the nose, roof of the mouth and eyes. These symptoms will vary with the degree of sensitivity, the number of active allergens and the period of the sensitizations and the presence of secondary factors. The primary complications or those due to the allergic reactions, are (*a*) edematous and hypertrophic turbinates, (*b*) polypoid degeneration, (*c*) polyposis, and, if allergy occurs early in life and of severe grade, (*d*) facial deformity. The secondary complications are recurrent sinusitis, headaches and asthma. It is of extreme importance to recognize the presence of allergy in cases showing obvious infections.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

3: 393-432 (June) 1934

Early Diagnosis of Brain Tumors. C. Pilcher, Nashville, Tenn.—p. 393.
Diseases of the Thyroid Gland Which Are Commonly Called Goiter: Myxedema: Case Report. E. D. Lineberry, Birmingham.—p. 397.
Urologic Progress During the Past Twenty-Five Years. J. U. Reaves, Mobile.—p. 402.
Treatment of Malaria with Atabrine. R. O. Russell and B. F. Morton, Birmingham.—p. 406.
Résumé of the History and Present Application of Medical Licensure in the States. J. N. Baker, Montgomery.—p. 409.

American Journal of Diseases of Children, Chicago

47: 1178-1400 (June) 1934

Poliomyelitis: I. Experimental and Theoretical Basis for Serum Therapy; A Review. P. H. Harmon, Chicago.—p. 1179.
Id.: II. Results of Treatment in the Acute Disease; Analysis of Reports on Four Thousand Four Hundred Patients Treated with Serum; Observations on Two Thousand Six Hundred and Sixty Untreated Patients. P. H. Harmon, Chicago.—p. 1216.
The Blood Proteins of Children: The Distribution of Total Nitrogen in Whole Blood, Red Blood Cells and Serum Proteins from the Same Specimen. A. Bernhard, J. S. Leopold and I. J. Drekter, New York.—p. 1256.
*Vitamin A and Colds. Esther L. Gardner and F. W. Gardner, Loma Linda, Calif.—p. 1261.
Dimensions and Growth of the Palate in Infants with Gross Maldevelopment of the Upper Lip and Palate: Further Investigations. W. T. Peyton, Minneapolis.—p. 1265.
*Chorea Treated with Phenylethylhydantoin and Typhoid Vaccine: Comparative Study. J. A. Monfort, Brooklyn.—p. 1269.
Bacterial Flora of First Specimens of Meconium Passed by Fifty New-Born Infants. I. C. Hall and Elizabeth O'Toole, Denver.—p. 1279.
So-Called Breast Milk Intoxication. T. Tanaka, Yamaguchi, Japan.—p. 1286.

Vitamin A and Colds.—The Gardners found that supplementing the diet of school children with haliver oil or definitely enhancing it with vitamin A as found in foods decreased the incidence and severity of colds. Increased resistance was accompanied by a higher degree of general health, as was shown by an increase in weight.

Chorea Treated with Phenylethylhydantoin and Typhoid Vaccine.—Monfort states that an analysis of the twenty-four cases of chorea treated with phenylethylhydantoin and typhoid-paratyphoid vaccine revealed that there were marked benefits from phenylethylhydantoin in some cases but that the average duration of the disease was twenty-four days in the majority of cases. In eight cases the condition was unimproved. In one case the drug caused death. The results of treatment with typhoid-paratyphoid vaccine showed that this form of therapy is not dangerous but that it produces chills during the febrile period. However, the duration of treatment with this preparation was shorter by eight days than that with phenylethylhydantoin, the average duration being about sixteen days. There were no recurrences of chorea in the twenty-three patients treated with typhoid-paratyphoid vaccine who were followed for one year, and it was noted that carditis, the most dangerous sequel of chorea, did not occur in those treated with this preparation during this period. When typhoid-paratyphoid vaccine was introduced, a definite change was observed in the acid-base equilibrium. Invariably there was a low carbon dioxide content of the blood during the prolonged fever, with a low level for chlorides, a moderate increase of the calcium level and a decrease of the phosphorus level. In three cases the p_H of the blood was slightly increased coincidentally with the lowering of the carbon dioxide content. Although there is a lowering of the carbon dioxide volume per cent and of the chloride level, there is an increase in p_H. The bases are not lost but are bound to the proteins, owing to the increase in p_H. There is probably a sudden shift to alkalinity. Diminution of the blood pressure was also noted during the febrile period. The pulse pressure fell disproportionately more than the systolic pressure. Seventeen patients of the entire series treated with phenylethylhydantoin and typhoid-paratyphoid vaccine showed evidence of carditis on admission. Twenty-three patients had had their tonsils removed. Eight showed roentgenographic evidence of sinus and antral involvement. All the patients treated with typhoid-paratyphoid vaccine gave a positive Widal reaction in all dilutions during their stay in the hospital.

American Journal of Pathology, Boston

10: 321-442 (May) 1934

Effect of Single and Multiple Doses of the Parathyroid Hormone on the Calcification of the Dentin of the Rat Incisor. I. Schour, W. R. Tweedy and F. A. McJunkin, Chicago.—p. 321.
Microglia-Like Cells and Their Reaction Following Injury to the Liver, Spleen and Kidney. H. S. Dunning and L. Stevenson, New York.—p. 343.
*Polyarteritis Nodosa. R. B. Haining and T. S. Kimball, Los Angeles.—p. 349.
Histologic Changes in the Central Nervous System Following Equine Encephalomyelitis. O. Larsell, Portland, Ore.; C. M. Haring, Berkeley, Calif., and K. F. Meyer, San Francisco.—p. 361.
Anomalies of the Interventricular Septum and Pulmonary Orifice: Report of Two Cases. B. Halpert and R. Tennant, New Haven, Conn.—p. 375.
*Thrombopenic Purpura Associated with Carcinoma of Stomach with Extensive Metastases. J. S. Lawrence and E. B. Mahoney, Rochester, N. Y.—p. 383.
Tracheo-Esophageal Fistula of Syphilitic Origin: Report of Case. C. J. Bucher and J. Ono, Philadelphia.—p. 391.
Myxoma of the Heart Valves: Report of Case. T. C. Jaleski, New York.—p. 399.
Microscopic Metastases in the Thyroid Gland. C. O. Rice, Minneapolis.—p. 407.
*Sarcosporidia in Myocardium of Premature Infant: Report of Case. A. T. Hertig, Boston.—p. 413.
Occurrence of Amyloidosis in Rabbits Experimentally Infected with Tuberculosis. R. H. Thomas, New York.—p. 419.
Study of the Action of a Filtrable Staphylococcic Toxin on the Kidneys of Normal Rabbits. R. H. Rigon, A. L. Joyner and E. T. Ricketts, Durham, N. C.—p. 425.
Histologic Study of the Adrenal Cortex in Mongolism. L. C. Hirning and S. Farber, Boston.—p. 435.

Polyarteritis Nodosa.—Haining and Kimball are of the opinion that a specific filtrable virus with a selective affinity for the small and medium sized muscular type arteries of the body is probably the cause of polyarteritis nodosa. Any organ or combination of organs may be affected at any time in the course of the disease, and the resulting clinical manifestations may be bizarre in the extreme. The visceral arteries are involved more frequently than those of the extremities, and the organs most commonly affected are the kidneys, heart, gastrointestinal tract, pancreas, muscles, peripheral nerves, liver, spleen and cerebrum. Pathologically the inflammatory changes are not confined to the adventitia and periarterial connective tissue, as originally supposed. All the vascular coats are eventually involved and the primary changes take place in the media. Destruction of the media may give rise to aneurysmal formation. Involvement of the intima with rupture of the elastic membrane may produce thrombosis. The process as a rule is progressive and in practically all reported cases there has been evidence of acute inflammatory changes superimposed on the chronic reparative efforts. However, Arkin has described a case of histologic healing and he believes that in rare instances the process may come to a complete standstill. Polyarteritis nodosa is seldom diagnosed or even suspected before necropsy, and even at necropsy there may be no gross indications of its presence. The internist should be familiar with the cardinal symptoms of the disease and its behavior. Then, when the commoner possibilities have been carefully ruled out in a patient with septic manifestations and varied symptomatology, polyarteritis nodosa should be given consideration. Carling and Hicks, and recently Schottstaedt have reported cases in which remission of symptoms seemed to follow the intravenous administration of arsenicals.

Thrombopenic Purpura with Carcinoma of Stomach.—Lawrence and Mahoney present a case of thrombopenia as a complication of carcinoma of the stomach, in which there were

extensive bone marrow metastases. So far as the blood picture was concerned there was one observation that was unusual—the marked diminution in the number of the platelets. It would seem that the presence of large numbers of tumor cells in the bone marrow was the probable cause of the thrombopenia. However, studies of the bone marrow sections reveal an approximately normal number of morphologically normal megakaryocytes. Nevertheless, the presence of these megakaryocytes does not prove that these cells were functionally normal. Increased peripheral destruction or loss of platelets cannot be excluded. The question arises as to the relation of the thrombopenia to the hemorrhagic diathesis. The authors believe that the connection is probably close, although it would be impossible to say that the bleeding phenomena were not dependent, in part, on changes that may have occurred in the permeability of the capillary walls. The presence of large numbers of early cells of the myeloid series and of numerous nucleated red blood cells is not unusual. It is unusual to find large numbers of nucleated red blood cells and many early myeloid cells in idiopathic thrombopenic purpura, although they may be found after recent massive hemorrhage. The value of studies of the sternal marrow in such persons cannot be emphasized too strongly. The authors believe that, had they been able to obtain a sternal marrow biopsy from this patient during life, a positive diagnosis could have been made. This procedure was planned, but the sudden death of the patient prevented it.

Sarcosporidia in Myocardium of Premature Infant.—Hertig observed a sarcosporidial infection in the myocardium of a premature infant in which the sarcosporidial cysts were in the early stage of development. Even in experimental studies it is uncommon to find sarcocysts with fewer than eight spores, although moderate numbers of the forms studied here were of this type. The method of infection is unknown. However, since the infant was 26 days of age at death, the infection could have been contracted shortly after birth, because the stage of development coincides with that seen in animals from twenty-six to twenty-nine days after ingestion of the infective spores. Theobald Smith and Scott state that intra-uterine infections do no occur in the lower animals, although this method cannot be ruled out in this case. Since mouse feces are known to be infective and since indigenous mouse infections may be common, this might have been a source of infection.

American Journal of Psychiatry, New York

13: 1157-1404 (May) 1934

*Hematoporphyrin as a Therapeutic Agent in the Psychoses. E. A. Strecker, H. P. Palmer and F. J. Braceland, Philadelphia.—p. 1157.
Nutrition in Mental Hospitals. M. A. Bliss, St. Louis.—p. 1175.
Intensive Psychiatric Study of Prisoners; Receiving Routine in the Classification Clinic Elmira Reformatory. J. L. McCartney, Elmira, N. Y.—p. 1183.
Physiologic Observations During Intravenous Sodium Amytal Medications: Preliminary Report. W. F. Lorenz, H. H. Reese and Annette C. Washburne, Madison, Wis.—p. 1205.
Schizophrenic Traits in the Functional Psychoses and in Normal Individuals. J. Page, C. Landis and S. E. Katz, New York.—p. 1213.
A Study in Psychobiology. C. T. Prout, Hartford, Conn., and L. H. Ziegler, Albany, N. Y.—p. 1227.
Clinical Studies of Mental Tests. S. H. Tulchin, New York.—p. 1237.
Constitutional Factors in Homosexuality. G. W. Henry and H. M. Galbraith, White Plains, N. Y.—p. 1249.
Historical Survey of the Literature of Stupor: Report of Case of Twelve Years' Duration with Complete Amnesia for Ten Years. Charlotte Munn, Orangeburg, N. Y.—p. 1271.
The Genetic Relationship of Blood Groups and Schizophrenia. M. Yorshis and J. Gottlieb, Worcester, Mass.—p. 1285.
The Nosological Position of Panic Reactions. O. Diethelm, Baltimore.—p. 1295.
Age Incidence and Distribution of General Paresis in Eastern Illinois. E. T. Hoverson and G. W. Morrow, Kankakee, Ill.—p. 1317.
Delusions of Spiritism: Psychiatric Reactions. N. Gotten and C. A. Patten, Philadelphia.—p. 1331.
Concomitance of Organic and Psychologic Changes During Marked Improvement in Schizophrenia: Case Analysis. M. H. Erickson, Worcester, Mass.—p. 1349.

Hematoporphyrin as Therapeutic Agent in the Psychoses.—Strecker and his co-workers studied the responses of thirty-seven patients to the administration of hematoporphyrin. Twenty-three patients with manic-depressive reactions were treated during the depressed phase with intramuscular and oral administration of hematoporphyrin hydrochloride for an average period of from fifty to sixty days. Of this number five showed marked sustained improvement, six showed moderate sustained improvement and six were generally benefited, but the course of the psychosis did not seem to be positively affected. Six gave no favorable response. Seventeen of the twenty-three patients may be said to have been definitely helped by the treatment. Four of eight patients suffering from involutional melancholia showed marked improvement, which has been maintained after the treatment was terminated. One was moderately improved and has maintained this gain. Two were generally better during and after treatment but have not made complete recoveries. Only one failed to respond favorably. Of six schizophrenic patients, one made substantial physical gains, has remained generally better and has adjusted his life at a considerably lower level but is working steadily. Definite stimulation and animation were evident in all the schizophrenic patients treated, but in five of these the reaction was not of constructive nature. These five subsided into passive states after the treatment was discontinued. The authors conclude that when hematoporphyrin is administered to psychotic patients the substance in some way increases the available energy of the person. Whatever the physiologic action, the actual somatic and psychic benefits seem to be derived from its administration. The intramuscular injections consisted of 1 cc. of solution (2 mg. of hematoporphyrin hydrochloride) every other day for twenty days and then after a rest period of from five to seven days a second course of 2 cc. of solution (4 mg. of hematoporphyrin hydrochloride) every other day for a period of twenty days. In a number of cases a third series of 2 cc. injections was given. Oral doses were begun at 10 drops of solution (3 mg. of hematoporphyrin hydrochloride) three times a day, before meals, during the first series of intramuscular injections, increasing to from 15 to 30 drops (5 to 10 mg. of hematoporphyrin hydrochloride) three times a day, before meals, during the second and third series.

Archives of Internal Medicine, Chicago

53: 809-952 (June) 1934

Residual Hepatic Damage in Catarrhal Jaundice as Determined by the Bilirubin Excretion Test. L. J. Soffer and M. Paulson, Baltimore.—p. 809.
Factors Involved in the Production of Skeletal Muscle Pain. S. Perlow, P. Markle and L. N. Katz, Chicago.—p. 814.
Blood Cholesterol and Hypometabolism: Suprarenal and Pituitary Deficiency, Obesity and Miscellaneous Conditions. L. M. Hurxthal, Boston.—p. 825.
*Malignant Hypertension: The Histologic Changes in the Kidneys. E. F. Cain, Rochester, Minn.—p. 832.
Changes of the Digestive Tract in Uremia: Pathologic Anatomic Study. R. H. Jaffé and D. R. Laing, Chicago.—p. 851.
*Effect of Arteriosclerosis and Benign and Malignant Hypertension on the Area of Histamine Flares. A. C. Ernstene and M. Snyder, Cleveland.—p. 865.
True Nonparasitic Chyluria Associated with Menstruation: Report of Case. H. A. Cookson and T. H. Pullar, Sunderland, England.—p. 878.
Acid-Base Balance in Pathologic Conditions: III. Serum Electrolyte Changes in Acute Mercuric Chloride Poisoning. E. Muntwyler, C. T. Way and Elizabeth Pomerene, Cleveland.—p. 885.
Congestive Heart Failure: XX. Cheyne-Stokes Respiration as the Cause of Paroxysmal Dyspnea at the Onset of Sleep. T. R. Harrison, C. E. King, J. A. Calhoun and W. G. Harrison Jr., Nashville, Tenn.—p. 891.
Id.: XXI. Observations Concerning the Mechanism of Cardiac Asthma. T. R. Harrison, J. A. Calhoun and W. G. Harrison Jr., Nashville, Tenn.—p. 911.
*Periosteal Ossification in Myelogenous Leukemia: Report of Case Associated with Acute Rheumatic Fever. J. C. Ehrlich and S. Forer, New York.—p. 938.

Malignant Hypertension: Histologic Changes in Kidneys.—Cain found diffuse changes involving glomeruli, tubules, arterioles, arteries and interstitial tissue in a group of cases of malignant hypertension. The most prominent changes occurred in the arterioles; they consisted in extreme narrowing of the lumen, apparent increase in the numbers of endothelial cells, subendothelial fatty and hyaline degeneration, apparent thickening of the tunica media and an increased amount of connective tissue, chiefly in the tunica adventitia. The ratios of the wall to the lumen of the renal arterioles were markedly reduced. The kidneys were not markedly or uniformly decreased in size.

Effect of Arteriosclerosis on Area of Histamine Flares.—Ernstene and Snyder measured the area of the flare produced by injecting 0.02 cc. of a 1:2,000 solution of histamine dihydrochloride into the skin of the midforearm in normal persons, in patients having arteriosclerosis and normal blood pressure and

in patients having benign essential hypertension, hypertension of the intermediate grade and malignant hypertension. The average area of the flare in thirty normal persons was 31 sq. cm., and the smallest flare recorded had an area of 18 sq. cm. A distinct tendency toward flares of diminished size was observed in the patients having arteriosclerosis and normal blood pressure. In eleven patients who had slight or moderate degrees of arteriosclerosis the average area of the flare was 22 sq. cm., while the average area in fourteen patients having advanced arteriosclerosis was 18 sq. cm. Three patients of the first group and nine of the second had flares of smaller size than the smallest obtained in a normal person. The area of the flare was within the limits of normal in twenty-one patients having benign essential hypertension, and the average area for the group was 29 sq. cm. The average area of the flare in eleven patients having hypertension of the intermediate grade was reduced to 20 sq. cm. Four of these patients had smaller flares than the smallest observed in a normal person. In eleven of sixteen patients who had malignant hypertension the area of the flare was less than the smallest recorded in a normal person, while in only three did it exceed 24 sq. cm. The average area for the group was 16 sq. cm., approximately one-half the average in normal persons. The results indicate that observations on the area of the histamine flare should prove a useful adjunct in distinguishing the intermediate and malignant types of hypertension from the benign form.

Periosteal Ossification in Myelogenous Leukemia.—Ehrlich and Forer report a case of "acute" myeloid leukemia which presented the picture of acute rheumatic fever during an aleukemic phase and which at necropsy presented the anatomic evidence of both diseases. The occurrence of periosteal changes in the left humerus at the beginning of the clinical course was found at necropsy to have occurred on the basis of repeated subperiosteal leukemic infiltrations with secondary ossification in layers. The authors state that a review of the literature of the changes in the bone in leukemia and the study of their case result in the inclusion of leukemia in the differential diagnosis of periosteal elevation and ossification.

Archives of Neurology and Psychiatry, Chicago

31: 1129-1374 (June) 1934

Origin of Motor Reactions Produced by Electrical Stimulation of Cerebral Cortex. J. G. D. de Barenne, New Haven, Conn.—p. 1129.
Histopathology of Central Nervous System in Epidemic Encephalitis (St. Louis Epidemic). A. Weil, Chicago.—p. 1139.
Encephalomalacia in Infants (Virchow's Interstitial Encephalitis). I. B. Diamond, Chicago.—p. 1153.
*Etiology of Epilepsy, with Especial Reference to Its Occurrence in Twins. A. J. Rosanoff, Leva M. Handy and Isabel Avis Rosanoff, Los Angeles.—p. 1165.
*Encephalographic Studies in Manic-Depressive Psychosis: Report of Thirty-Eight Cases. M. T. Moore, D. Nathan, Philadelphia; Annie R. Elliott and C. Laubach, Norristown, Pa.—p. 1194.
*Sclerotic Atrophy of Cerebellum: Report of Two Cases. G. B. Hassin, Chicago.—p. 1205.
Contamination of Cerebrospinal Fluid by Blood. P. Solomon, Mary Elizabeth Dailey and F. Fremont-Smith, Boston.—p. 1222.
Acute Lymphocytic Meningitis. J. L. Abramson, Brooklyn.—p. 1235.
Symptomatic Inflammation. Ch'Eng Yü-Lin, Munich, Germany.—p 1247.

Etiology of Epilepsy, Especially in Twins.—Rosanoff and his associates present 107 cases of twins in which at least one of the twins had epilepsy. The distribution of epilepsy and other neuropsychiatric conditions found among the other twins of the pairs is as follows: (1) in monozygotic twins, epilepsy, twelve; deteriorating psychosis and tumor of the spinal cord, one each; normal, nine (39.1 per cent); (2) in dizygotic twins, epilepsy, nine; mental deficiency, six; mental deficiency with psychosis, mental deficiency with behavior difficulty, deteriorating psychosis, behavior difficulty and dementia paralytica, one each; normal, sixty-four (76.2 per cent). Hereditary factors undoubtedly exist in the etiology of epilepsy, as is indicated by the comparison of monozygotic and dizygotic twins. Epilepsy, especially that existing from birth or from an early age, is closely related by both individual and familial association to certain cases of mental deficiency and Little's disease. The borderland of epilepsy is, moreover, replete with other conditions, particularly psychotic disease, behavior problems, jacksonian fits, left-handedness and possibly certain conditions often seen among school children; namely, stammering, other disorders of speech and cases of "nonreaders" and constitutionally poor spellers. Evidence has accumulated in the past fifteen or twenty years to the effect that epilepsy, traditionally considered a neurosis, functional in nature and "idiopathic" in etiology, is rather a decerebration syndrome, definitely organic. Its relationship to other decerebration syndromes, such as mental deficiency, Little's disease and the other conditions, suggests a common factor of etiology; namely, trauma at birth. There seem to be two factors involved: trauma at birth and vulnerability. The severity of trauma at birth is determined by conditions causing dystocia; primiparity, premature rupture of the membranes, abnormal presentations and contracted pelvis. The degree of vulnerability also varies according to certain conditions: a hereditary factor, a sex factor, premature birth or an underweight condition at birth, and the handicapping conditions of multiple pregnancy. It has been shown statistically that epilepsy, mental deficiency and some other clinical types of decerebration occur with relatively greater frequency among the first-born—a fact that points to trauma at birth. In connection with postnatal trauma, age seems to be an important factor in the etiology of epilepsy. Whereas trauma to the head sustained in infancy, childhood or adolescence frequently causes epilepsy, in later life it does so in but a small proportion of cases. The epileptic syndrome in traumatic cases is determined not by the severity or extent of the original injury to the brain but by its localization or by the inflammatory reaction with progressive tissue change that follows it, or by both. Chronic and deteriorating psychotic disease is frequently associated with epilepsy both in individual cases and in familial groups. In individual cases there is not necessarily a correspondence in severity between the epileptic and the psychotic manifestations. These facts, together with evidence yielded by some cases among twins, indicate that some chronic and deteriorating psychoses which are usually counted as dementia praecox in the statistics of state hospitals are really but a special clinical type of decerebration, based on an etiology similar in many cases to that of epilepsy, mental deficiency and Little's disease. The occurrence of epileptic syndromes in connection with nontraumatic conditions is not inconsistent with the decerebration theory of epilepsy. Decerebrating effects can be produced by a tumor of the brain, neurosyphilis and cerebral arteriosclerosis or, even in the absence of brain lesion, by toxic, autotoxic, infectious or circulatory factors.

Encephalographic Studies in Manic-Depressive Psychosis.—Moore and his associates made an encephalographic study of thirty-eight cases of manic-depressive psychosis in various stages of the manic-depressive cycle. They found that the cerebrospinal fluid pressure, in terms of millimeters of mercury, have in the majority of cases been top normal or higher, indicating the presence of the factor of chronic increased intracranial pressure. The quantity of cerebrospinal fluid removed in the majority of cases has indicated varying degrees of cortical atrophy and enlargement of the ventricular system and cisterns. No definite cerebral pattern is obtained in a sufficient number of cases to be characteristic. The encephalographic pathologic condition is manifested in the following ways: (1) cortical atrophy of varying intensity, (2) enlargement of the ventricular system, (3) asymmetry of the lateral ventricles, (4) absence of cortical air markings, (5) enlargement of the cisterns, (6) island of Reil atrophy, (7) enlargement of the sulcus callosi and sulcus cinguli, (8) increased interhemispheric air, and (9) cerebellar atrophy. None of the encephalograms showed a normal cerebral pattern.

Sclerotic Atrophy of the Cerebellum.—Hassin reports two cases of sclerotic atrophy of the cerebellum from the study of which he concludes that atrophy of the cerebellum may be an acquired morbid condition and in cases of long standing may result in sclerosis of parts of the cerebellum. The lateral lobes, especially the upper semilunar and the quadrilateral, may alone be involved, or they may be affected together with the vermis. Histologically, the condition somewhat resembles that occurring in any other terminal degenerative state when the nerve tissue is replaced by a glial tissue scar. The cerebellar atrophy resulting from sclerosis has its homologue in the cerebral atrophy and sclerosis known as Pick's disease and pos-

sesses no specific histologic features. The striking pathologic feature is calcification of the Purkinje cells in the areas that are undergoing atrophy. The clinical features cannot be considered specific, and, as they may be absent altogether, a pathologic condition of this sort remains undiagnosed.

Archives of Surgery, Chicago

28: 1001-1194 (June) 1934

Relationship Between Cystic Disease of the Breast and Carcinoma. O. J. Campbell, Minneapolis.—p. 1001.
Peptic Ulcers: Comparative Frequency After Deprivation of Bile and Pancreatic Juice. B. N. Berg, New York.—p. 1057.
*Changes in the Bone in Hodgkin's Granuloma. L. F. Craver, New York, and M. M. Copeland, Baltimore.—p. 1062.
Clean Intestinal Anastomosis: Experimental Study. E. J. Poth, San Francisco.—p. 1087.
Pathologic Fractures of the Spine Associated with Disorders of Calcium Metabolism. B. W. Moffat, New York.—p. 1095.
Toxemia in Acute Intestinal Obstruction: Toxicity of Intestinal Contents, with Especial Reference to the Pancreaticoduodenal Secretion. W. D. Gatch, H. M. Trusler and R. E. Lyons Jr., Indianapolis.—p. 1102.
*Diathermy and Regeneration of Bone. E. D. Weinberg and G. E. Ward, Baltimore.—p. 1121.
Lipoma Pseudomyxomatodes of the Upper Extremity. M. Thorek and P. Thorek, Chicago.—p. 1130.
Chromaffin Cell Tumor Causing Paroxysmal Hypertension, Relieved by Operation. F. A. Coller, H. Field Jr. and T. M. Durant, Ann Arbor, Mich.—p. 1136.
Tuberculosis of the Appendix. H. Koster and L. P. Kasman, Brooklyn.—p. 1149.
*Hemorrhage and Shock as Causes of Death Following Acute Portal Obstruction. R. Elman and W. H. Cole, St. Louis.—p. 1166.
Fifty-Third Report of Progress in Orthopedic Surgery. J. G. Kuhns, E. F. Cave, S. M. Roberts, J. S. Barr, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York; R. I. Sterling, Edinburgh, Scotland, and P. D. Wilson, Boston.—p. 1176.

Changes in the Bone in Hodgkin's Granuloma.—Craver and Copeland studied histologically 172 patients having Hodgkin's granuloma. Twenty-seven patients were found to have involvement of the bone. The bones most frequently involved were those of the spine and the pelvis. Pathologic fracture was rare, but collapse of the vertebrae was frequent. The two types of osseous changes were osteoplastic and osteolytic. A combination of the two was seen in many cases. Osseous involvement may be assumed to arise from the marrow foci of Hodgkin's granuloma or from the contiguous diseased lymph nodes from which direct infiltration into bone occurs. The intervertebral disks were involved rarely. No relationship between the structure of the lymph nodes and the type of osseous change could be demonstrated. The authors found Heublein's method of prolonged continuous low intensity irradiation of the entire body to be a valuable part of the treatment in a number of cases. The gross lesions of the bones may be treated to good advantage either by single large suberythema doses or by fractional doses of high voltage roentgen rays. Relief from pain is often prompt and reparative processes may be demonstrated in some cases. In the terminal stages they do not attempt routine irradiation of all the bones, although it is well known that the marrow is usually diffusely involved, as in such cases a severe degree of anemia and sometimes leukopenia already exists and would only be aggravated by irradiation.

Diathermy and Regeneration of Bone.—Weinberg and Ward endeavored to determine whether there is an actual rise in temperature in bone when an extremity of an experimental animal is submitted to treatments with diathermy; if there is a rise in the temperature of bone, whether this results in any demonstrable physiologic effect on bone in normal laboratory animals, and whether this physiologic effect, if present, hastens repair processes following injury to the bone. During postoperative treatment with diathermy, bleeding from the open wound was found to be due to the treatment. There was a free flow of blood shortly after the turning on of the current, but the bleeding stopped as soon as the heat was discontinued and the leg allowed to cool a little. As soon as hot electrodes touched the leg of the animal a rapid rise in temperature occurred in both the muscle and the bone, demonstrating that with such a small part of the body as the dog's foreleg external heat will also raise the temperature of the bone. This seems to indicate that in these animals, at least, therapeutic effects may be obtained by the external application of hot objects. The rise in temperature of the muscles and that of the bones are nearly parallel. The temperature of the muscles rises a little faster at first, to be overtaken later by the temperature of the bones, which, near the end of the experiment, again falls. In one week microscopic changes in the treated leg, in which the hole was filled with vascularized connective tissue, a few degenerated red blood cells and a small amount of bone dust, showed formation of new bone arising from the cut edges of the endosteum. The endosteum in the neighborhood of the hole showed a marked proliferation of osteoid tissue extending down into the marrow cavity, and the marrow cavity near the hole was filled with young fibrous connective tissue, which was highly vascularized. In two weeks the treated leg showed marked formation of new bone arising from the periosteum, the endosteum and the cut edges of the compacta. In three weeks there was a decided advance in the periosteal and endosteal formation of new bone, and in four weeks the treated leg revealed marked new periosteal bone. In four weeks in the control leg there was little or no periosteal new bone, and the hole was filled with a lamellar type of bone, so that it was not yet healed.

Causes of Death Following Acute Portal Obstruction.—In an effort to explain the cause of death following ligation of the portal vein, Elman and Cole resorted to many different types of experiments. It seems clear to them that the rapid death which so regularly follows total occlusion of the portal vein is due to circulatory failure, because of extensive loss of blood from the general circulation into the trapped splanchnic area. No evidence of the production or absorption of a toxic substance (by guinea-pigs and white mice) was found. The evidence in favor of the purely physical factor was uniform and consistent. The increase in weight of the splanchnic area following occlusion of the portal vein was great enough, on the basis of the amount of entrapped blood it contained, to have caused death from shock alone. The fall in blood pressure was similar to that noted after an extensive hemorrhage except that the pressure was sustained at a low level until death. The behavior and appearance of the animal after ligation of the portal vein were similar to those seen after marked loss of blood from hemorrhage. Attempts to raise the blood pressure and prolong life by transfusions of blood were successful, and it was possible to postpone death for more than six hours. It was possible to prolong life and prevent the characteristic fall of blood pressure following occlusion of the portal vein by ligating the aorta above the celiac axis, which effectively stopped blood from entering the splanchnic area. These animals lived only a few hours, but they lived as long as animals with ligation of the aorta alone. The results of the experiment were the same if, in addition, several hundred cubic centimeters of blood was injected into the mesenteric arteries to produce the cyanosis and congestion ordinarily seen after ligation of the portal vein. Death following ligation of the portal vein is probably hastened by the fact that ligation at the same time prevents the gastro-intestinal tract from aiding in the loss of fluid. When a low blood pressure is maintained too long it can never be corrected, no matter how much blood is transfused. The effect may be due to changes produced in the nerve cells. It is likely that too low a pressure slows the metabolic exchange and causes irreparable alteration in the central nervous system. On the other hand, the defect caused by a low pressure may be due to increased capillary permeability.

Colorado Medicine, Denver

31: 185-220 (June) 1934

*Early Recognition and Treatment of Malignancy of the Skin. G. P. Lingenfelter and J. V. Ambler, Denver.—p. 189.
Primary Carcinoma of the Lung Simulating Pulmonary Tuberculosis. I. D. Bronfin, Denver.—p. 193.
Cancer of the Esophagus. C. O. Giese, Colorado Springs.—p. 200.
Sarcoma of the Cervix Uteri. E. W. Perrott, Denver.—p. 202.
Cooperation of Medical and Dental Practitioners to Avoid Dangerous Systemic Complications in the Extraction of Teeth. J. W. Seybold, Denver.—p. 207.

Early Recognition and Treatment of Malignant Changes of the Skin.—Lingenfelter and Ambler state that there is no one method in the treatment of malignant conditions of the skin that can be used successfully to the exclusion of all others. They advise the use of the scalpel, the high fre-

quency cutting current, electrodesiccation, electrocoagulation, radium and x-rays, or a combination of two or more methods, according to the case. The choice of therapy to be employed is dependent on various factors. Early basal cell and squamous cell carcinomas are often eliminated with comparative ease by the use of radium or x-rays. However, they believe that in early lesions of both types a combination of some electrosurgical or surgical procedure combined with radiation is the safer method. To delay radical removal of such growths until radiation alone has been tried frequently changes the lesion from a minor one to one the complete removal of which may produce marked deformity. Except as a palliative measure, surface irradiation alone is rarely indicated for the more advanced or recurrent lesions; a combination with one or more of the surgical procedures is usually required. The authors give a brief description of the improved radium technic of Régand and Cade and its advantage over surgery in the treatment of intra-oral carcinoma.

Journal of Nervous and Mental Disease, New York

79: 621-748 (June) 1934

Relation of Premotor Cortex to Motor Activity. P. C. Bucy, Chicago. —p. 621.

Acroparesthesia and Quinidine: A Query and a Quest, with Report on American Literature on Acroparesthesia. S. E. Jelliffe, New York. —p. 631.

*Ephedrine in Narcolepsy. Gertrude Johnson, Battle Creek, Mich. —p. 652.

The Psychiatric Study of Hyperthyroid Patients. Agnes Conrad, New York.—p. 656.

Ephedrine in Narcolepsy.—Johnson reports a case of narcolepsy which confirms the results obtained by Doyle and Daniels in the treatment of narcolepsy with ephedrine. The patient, a nursing mother, was put on a blood building diet and given hydrochloric acid and pepsin, and also liver extract. Ephedrine hydrochloride was begun in a dosage of 0.0325 Gm. at 8 a. m., 12 m. and 4 p. m. The patient had immediate relief from the sleeping attacks. Five days later she reported complete relief. The medicine seemed to have no ill effects on either the mother or the baby. Seven months later the patient was still doing well, having no recurrence of symptoms as long as she keeps taking ephedrine. The patient has noticed that if she goes out in the evening the dosage is not quite sufficient; therefore she is given an additional half grain on these occasions.

Journal of Urology, Baltimore

31: 791-916 (June) 1934

*Aseptic Uretero-Intestinal Anastomosis. C. C. Higgins, Cleveland. —p. 791.

Lymphosarcoma of the Prostate. F. H. Cole and L. R. Martin, Detroit.—p. 803.

Economic Surgical Treatment of Acute Retention in Stricture. G. S. Peterkin, Seattle.—p. 813.

Primary Carcinoma of the Male Urethra: Case Report. J. A. Lazarus, New York.—p. 823.

Repair of a Recto-Urethral Fistula: Report of Case. C. R. Davis, Detroit.—p. 833.

Microscopic Carcinoma of the Testis Concealed in Chronic Granulation Tissue. P. J. Breslich, Chicago.—p. 835.

Comparative Studies of Hernia in Man and Animals. E. Andrews and A. Bissell, Chicago.—p. 839.

Smegmolith: Report of Case in a Female. J. W. Visher, Evansville, Ind.—p. 867.

Gonorrheal Endocarditis. E. Stone, Providence, R. I.—p. 869.

*Subcutaneous Vasoligation Needle. J. T. Short, Fort Wayne, Ind. —p. 897.

Hemorrhagic Infarction and Necrosis of the Testicle. E. McCormac, New Orleans.—p. 901.

Aseptic Uretero-Intestinal Anastomosis.—Higgins presents a technic for simultaneous bilateral transplantation of the ureters into the rectum, in which the normal course of the urine and the continuity of the ureter are preserved until after the formation of a new channel between the ureter and the rectosigmoid. The procedure is attended by no interruption of kidney function during the establishment of the new channel between the ureter and the intestine. The mortality in experimental animals has been practically negligible. The almost complete absence of peritonitis and acute renal infection has been remarkable. The immediate results in the author's eight clinical cases are gratifying, but he believes that insufficient time has elapsed to warrant any statement as to the ultimate results. The technic is as follows: A low median incision is made with the subject in a moderate Trendelenburg position. After the peritoneal cavity has been opened the intestine is displaced from the pelvis and held away from the operative field by moist tapes. The posterior parietal peritoneum is incised over the ureter at the usual site for transplantation and then freed from its bed by sharp dissection, thus isolating the ureter for approximately 8 cm. The point of transplantation into the rectosigmoid is selected and an incision 6.5 cm. in length is made along one of the longitudinal bands through the serous and muscular layers to the mucous membrane of the intestine. Lateral separation of the serous and muscular layers provides a trough, which is to be occupied by the transplanted ureter. The intestine is replaced in its normal position, the ureter is grasped at points adjacent to the trough in the intestine and placed in the trough in the intestine. A silk suture is passed about 1 cm. from the lower angle of the incision in the intestine through the wall of the ureter, which is in contact with the intestinal mucous membrane. This suture, preferably of the mattress type, passes into the lumen of the ureter itself and is passed through the mucous membrane of the intestine and tied tightly. The new channel should be produced near the distal end of the incision through the serous and muscular layers. To avoid contamination, the suture is always passed first through the ureteral wall and then through the mucous membrane of the intestine. The muscular and serous layers are reapproximated with interrupted silk sutures over the ureter. The ureter is thus incorporated in the intestinal wall for 3 to 4 cm. and the valve principle is allowed to function. Following the reapproximation of the serous and muscular layers over the ureter the cut edge of the peritoneum (postparietal) is stitched over the site of the incision in the intestine. After the new channel has been formed and intravenous urography demonstrates that it is functioning, cystectomy is performed.

Subcutaneous Vasoligation.—Short describes a method of subcutaneous vasoligation that can be carried out quickly without assistance and one that requires no after-care. Although the procedure can be performed with an ordinary three-eighths circle cutting needle, the operation is greatly facilitated by the use of a similarly curved cutting needle carrying the eye 0.5 cm. from the proximal end, which also has a cutting point. In addition to a needle, ligature and needle holder, a narrow-bladed knife, scissors and a hypodermic syringe containing a local anesthetic are required. The scrotum and adjacent parts are prepared by shaving, cleansing and the application of an antiseptic, and the penis is held upward against the abdomen with adhesive tape. The spermatic cord is grasped at a convenient point in the upper part of the scrotum and pulled forward. This facilitates the invagination of the left index finger, palmar surface forward, behind the entire cord at the same level. As the right hand releases the cord, allowing it to slip slowly backward, the vas is identified between the fingers by palpation and isolated over the left index finger below the middle of the distal phalanx, while the remainder of the cord is retracted outward by the left thumb and maintained in that position. A small area of skin 1 cm. mediad to the isolated vas is injected with procaine and a linear incision or nick from 3 to 4 mm. in length is made through the skin. This is most readily accomplished by transfixion with a narrow blade, such as a cataract knife. Capillary oozing may be disregarded. The needle armed with silk is then introduced through this opening and guided beneath the vas by the tactile sensation of the left index finger supporting it, and pushed through the skin beyond the vas but mediad to the bulk of the cord still reflected outward by the thumb. At this time the accuracy of the placement of the needle can be verified by palpation of the overlying vas against it. The needle is grasped at its point of emergence and advanced farther until the proximal end has cleared the vas. The needle is then reversed over the vas, pushed back into the original opening in the skin and drawn through. The ligature is tied tightly, the ends are cut short, and on its release the knot usually clears the skin, which falls together over it. A dab of cotton is applied with collodion and no further attention is required. The wound heals by first intention leaving no perceptible scar, while the vas tends in time to resume its usual position.

Missouri State Medical Assn. Journal, St. Louis

31: 225-260 (June) 1934

In Defense of Organized Medicine: President's Address. W. L. Allee, Eldon.—p. 225.
Medical Leadership: Address of President-Elect. C. T. Ryland, Lexington.—p. 226.
Mucocele of the Appendix Followed by Partial Obstruction of the Vena Cava. J. E. Dewey and J. N. Wakeman, Springfield.—p. 227.
Rôle of Infection in Chronic Nonspecific Arthritis. B. D. Senturia, St. Louis.—p. 229.
Treatment of Appendix Abscess. T. G. Orr, Kansas City, Kan.—p. 232.
*Perforations of the Labia Minora. W. C. Stude, St. Louis.—p. 233.
Cancer of the Stomach: Indications for Surgery. C. J. Hunt, Kansas City.—p. 236.
Emotions and Their Physical Symptoms. L. D. Cady, St. Louis.—p. 238.
Use and Abuse of Digitalis. E. L. Shrader, St. Louis.—p. 241.
Management of Cardiac Edema. O. S. Jones, St. Louis.—p. 245.

Perforations of the Labia Minora.—Stude cites three cases of perforation of the labia minora. The first case was considered to be of syphilitic origin in spite of a negative Wassermann reaction, since it presented a combination of both active and healed lesions. Other facts that pointed to syphilis as the etiologic factor were the patient's general physical status, the observations revealed by microscopic study of tissue sections and the extremely large number of perforations, which practically ruled out traumatism as a cause. In the second case the squamous cell carcinoma was evidently a secondary development, since the margins of the perforation were perfectly smooth and intact throughout the greater part of their extent. The evidence indicated the perforation to be the result of a chronic inflammatory ulceration either syphilitic or tuberculous in nature, most probably the former. In the third case either traumatism during labor or congenital malformation was to blame, although it is impossible to state which of these two causes was responsible. If the perforation is healed without ulceration, no local treatment is indicated. A Wassermann test, however, should be done and the patient examined for tuberculosis. In chronic ulceration, a specimen of tissue should be taken from the ulcerated area and studied microscopically. If this is not malignant, no special local treatment is necessary when the condition is proved to be of syphilitic origin. Tuberculous ulcers should be excised and chancroidal ulcers should be cauterized. Local cauterization combined with the intravenous injection of antimony and potassium tartrate has proved best in the treatment of inguinal granuloma. When cancer is present, complete vulvectomy and the removal of the inguinal and femoral lymph nodes are to be done if the patient's condition permits; otherwise resort may be had to the use of roentgen therapy.

New England Journal of Medicine, Boston

210: 1145-1196 (May 31) 1934

Diagnosis and Treatment of Subdural Hematomas: Report of Sixty-Two Cases. D. Munro, Boston.—p. 1145.
Adenocarcinoma of Stomach: Case Occurring in a Man Twenty-Seven Years of Age. R. L. Paterson and R. E. Gross, Boston.—p. 1161.
Metabolism of Levulose: IV. Hepatic Influence on Utilization of Galactose and Levulose. A. W. Rowe, Mary A. McManus and A. J. Plummer, Boston.—p. 1163.
Pathologic Dislocations of Shoulder Backward and Rotation Deformity. F. J. Cotton and G. M. Morrison, Boston.—p. 1169.

210: 1197-1242 (June 7) 1934

The Objectives of Medical Progress. L. Davis, Boston.—p. 1197.
Postencephalitic Parkinson's Disease Treated by Total Thyroidectomy: Case. A. Myerson and D. D. Berlin, Boston.—p. 1205.
*Effect of Dinitrophenol on Metabolism as Seen in Schizophrenic Patients. J. M. Looney and R. G. Hoskins, Worcester, Mass.—p. 1206.
Hypertrophic Arthritis of the Hip: Review of Seventy-Nine Patients. J. G. Kuhns, Boston.—p. 1213.
Multiple Congenital Anomalies of Müllerian and Genito-Urinary System with Absence of the Coccyx: Case. J. L. Newell, Boston.—p. 1217.
Repair of Orbicular Ligament at Elbow. F. J. Cotton and G. M. Morrison, Boston.—p. 1218.

Effect of Dinitrophenol on Metabolism in Schizophrenia.—In order to study the effect of raising the low basal metabolic rate, which is consistently found in schizophrenic patients, by the use of alpha-dinitrophenol, Looney and Hoskins administered the drug to ten patients in doses of from 3 to 4 mg. per kilogram of weight for a period of forty-nine days. Each week analyses were made of the blood for complete nitrogen partitions, sugar, cholesterol, lactic acid, glutathione, carbon dioxide, oxygen and p_H. Nitrogen partitions were made on urine as well as routine qualitative analyses. It was found that there was an increase in the basal metabolic rate of approximately 50 per cent without any concurrent change in blood pressure and pulse rate or temperature. At first there was a gradual increase in the nonprotein nitrogen, urea nitrogen and uric acid nitrogen, which again receded to normal as the treatment continued. Blood cholesterol and lactic acid showed considerable variation but no consistent trend. Patients lost from 4½ to 6½ pounds (2 to 3 Kg.) in weight, but no deleterious effects were noted.

New York State Journal of Medicine, New York

34: 475-518 (June 1) 1934

Drainage of the Thoracic Spaces. H. Lilienthal, New York.—p. 478.
Physiology of the Brain: Its Relation to Disorders of Speech. G. W. Henry, New York.—p. 489.
Errors in the Practice of Physical Therapy. L. A. Hadley, Syracuse.—p. 493.
The Function of a Cancer Committee of a Hospital Staff. J. M. Swan, Rochester.—p. 495.
The Roentgen Diagnosis of Lesions of the Small Intestines. S. J. Goldfarb, New York.—p. 500.
*Pitressin Test in Epilepsy. A. W. Jacobsen, Buffalo.—p. 506.

34: 519-578 (June 15) 1934

Qualified Medicolegal Experts, Their Value to the Community and to the Medical and Legal Professions. C. Norris, New York.—p. 520.
Tumors of the Breast, Their Origin and Course of Development. S. H. Curtis, Troy.—p. 526.
Nonoperative Physical Measures in Gynecology. Madge C. L. McGuinness, New York.—p. 533.

Pitressin Test in Epilepsy.—Jacobsen believes that retention of fluid in the body tends to induce seizures and uses this fact as the basis of a test for epilepsy. By means of the pitressin test a child having seizures can be caused promptly to have a typical seizure, provided it is a case of epilepsy. The procedure is to give fluids to the point of establishing a positive water balance, and, when water has been retained to the extent of causing an increase of body weight of from 3 to 6 per cent or more, a convulsion will result. Under ordinary conditions, output will keep pace with intake and no retention will result. But by making use of the antidiuretic effect of pitressin a positive water balance is readily induced. In itself pitressin cannot produce a convulsion in the normal or in the epileptic subject. The application of the test consists in giving 300 cc. of water every two hours and an injection of pitressin every four hours, until a positive water balance is established. The dose is 0.2, 0.3, 0.4 cc., and thereafter 0.5 cc. doses until a seizure occurs or until about eight or ten doses have been given. If a seizure occurs, no nourishment or fluids are to be given except 1 cc. of cream per pound of body weight every four hours. This seems to be the most effective way to eliminate further seizures. The author has used the test in about forty cases and thus far has found it reliable. The only cases in which it was of no help were those few in which no positive water balance could be established, even with pitressin, and therefore the negative results could not rule out epilepsy. Two children became nauseated so that the test had to be discontinued. In the large number of cases in which the type of seizure is indeterminate, this test proves a valuable aid to diagnosis.

Ohio State Medical Journal, Columbus

30: 337-408 (June 1) 1934

Diagnosis and Prognosis of Tuberculosis in Children. A. G. Mitchell and W. E. Nelson, Cincinnati.—p. 357.
Treatment of Syphilis. C. S. Wright, Philadelphia.—p. 362.
The Defective Delinquent: Review of Five Hundred and Fourteen Cases. C. C. Kirk and A. T. Hopwood, Orient.—p. 367.
Peptic Ulcer of Meckel's Diverticulum. G. Renner Jr., Cincinnati.—p. 371.
Spinal Anesthesia. F. R. Kelly and R. M. Watkins, Cleveland.—p. 373.

Oklahoma State Medical Assn. Journal, McAlester

27: 195-238 (June) 1934

Success and Usefulness in Medicine. L. Long, Oklahoma City.—p. 195.
The Doctor in Politics. L. H. Ritzhaupt, Guthrie.—p. 198.
Relationship of the Urologist to the General Practitioner. S. D. Neely, Muskogee.—p. 201.
Pediatrics of the Future. C. M. Pounders, Oklahoma City.—p. 207.
Chairman's Address: Section on General Surgery. J. F. Kuhn, Oklahoma City.—p. 210.
Fusospirochetal Disease. A. S. Piper, Enid.—p. 211.

Public Health Reports, Washington, D.C.

49: 649-676 (June 1) 1934

Frequency of Eye Refractions in Nine Thousand Families, Based on Nation-Wide Periodic Canvasses, 1928-1931. S. D. Collins.—p. 649.

49: 677-696 (June 8) 1934

*Silicosis Among Granite Quarriers. J. J. Bloomfield and W. C. Dreessen.—p. 679.

Silicosis Among Granite Quarriers.—Bloomfield and Dreessen present a study of the effects of the inhalation of granite dust generated in granite quarrying. A clinico-roentgenographic study of sixty-three granite quarriers was made, in addition to determinations of the occupational dust exposure. The dust determinations showed that 38 per cent of the workers (drillers) were exposed to many times the amount of dust considered safe at the present time. The clinical observations disclosed that drillers were the only persons showing pathologic lung changes. Half of these workers with an exposure of from five to nineteen years had silicosis, and four of the five men with more than twenty years of such occupation showed this condition. The study suggests that quarry drillers may experience as high a death rate from pulmonary tuberculosis as do other pneumatic tool workers in granite-cutting sheds. The authors cite methods for the elimination of dust in quarry operations.

Rhode Island Medical Journal, Providence

17: 89-106 (June) 1934

Pulmonary Carcinoma. C. E. Schradieck, Providence.—p. 89.
Gas Bacillus Infection: Report of Two Cases. J. Fieldman, Providence. —p. 95.

Southern Medical Journal, Birmingham, Ala

27: 473-568 (June) 1934

*Referred Abdominal Symptoms in Pulmonary Tuberculosis. L. Brown, Saranac Lake, N. Y.—p. 473.
Some Notes on Referred Digestive Symptoms. T. R. Brown, Baltimore. —p. 481.
Abdominal Symptoms of Cardiovascular Disorders. J. T. King Jr., Baltimore.—p. 486.
Emotional and Nervous Factors in Symptoms of Abdominal Disease. W. W. Young, Atlanta, Ga.—p. 490.
Ulcerative Colitis: I. Relationship Between Bacillary Dysentery and Ulcerative Colitis. T. T. Mackie, with assistance of Mary S. B. Gaillard, New York.—p. 492.
Mechanism of Production of Curling's Ulcer. R. Kapsinow, Lafayette, La.—p. 500.
Clinical Investigation of Incidence of Rheumatic Heart Disease in a Subtropical Climate. E. W. Bitzer and G. L. Cook, Tampa, Fla. —p. 503.
Pneumococcic Peritonitis. J. H. Lyons, Washington, D. C.—p. 507.
Management of Fractures of Both Bones of the Leg. R. L. Anderson, Charleston, W. Va.—p. 513.
Rural Health Organization in the United States: Past, Present and Future. A. W. Freeman, Baltimore.—p. 517.
The Stone Age of Surgery. L. Clendening, Kansas City, Mo.—p. 521.
The Leukocytes in Skin Diseases. H. H. Hazen, Washington, D. C. —p. 527.
Principal Hay Fever Plants and Pollens of the South. H. M. Davison, M. I. Lowance, Atlanta, Ga., and O. C. Durham, Chicago.—p. 529.
Swelling of the Orbit, with Especial Reference to Cavernous Sinus Thrombosis. C. Tunstall, Charlottesville, Va.—p. 535.
Normal Associated Lateral and Also Dissociated Ocular Movements: Case. J. W. White, Norfolk, Va.—p. 539.
Repeated Neonatal Deaths from Impetigo Neonatorum. M. P. Rucker, Richmond, Va.—p. 540.
Intraligamentous Pregnancy at Term: Report of Two Cases. H. H. Ware Jr., Richmond, Va.—p. 540.
Satisfactory Treatment of Some Forms of Resistant Tinea Infection. H. R. Cogburn, Mobile, Ala.—p. 543.
Unilateral Clubbing of the Fingers: Case. G. Walsh and R. H. Alldredge, Fairfield, Ala.—p. 545.
Malaria, Part II: Results of Recent Research in the Treatment of Malaria. C. F. Craig, New Orleans.—p. 546.
Id.: Observations on Winter Infection Rates in Anopheles Maculipennis and A. Superpictus in Bulgaria. K. Drensky and R. K. Collins, New York.—p. 549.
Id.: Statistics of Malaria Prevalence. S. G. Thompson, Jacksonville, Fla.; J. G. Dempsey, New Orleans, and B. Toombs, Atlanta, Ga. —p. 552.
Id.: Results from Screening of Rural Homes in Lake County, Tennessee. H. E. Meleney and J. A. Crabtree, Nashville, Tenn.— p. 552.
Helping the Minnows. M. A. Fort, Bainbridge, Ga.—p. 558.

Referred Abdominal Symptoms in Pulmonary Tuberculosis.—Brown presents a study of 400 patients having pulmonary tuberculosis in whom intestinal tuberculosis had been excluded. Failure to exclude the presence of intestinal tuberculosis renders previous studies of referred abdominal symptoms of little value. The chronicity of pulmonary tuberculosis and the method of its treatment increase the likelihood of the occurrence of referred abdominal symptoms during its course. In the majority of patients in early stages under proper treatment the referred abdominal symptoms are of little moment. In the advanced stages of the disease the majority of the patients have intestinal tuberculosis and the symptoms are to be attributed in part to them. This complication can exist without any abdominal symptoms whatever. The abdominal symptoms referable to the surgical treatment of pulmonary tuberculosis (artificial pneumothorax, phrenic operation, thoracoplasty) are usually slight, though they may be pronounced and troublesome. Referred abdominal symptoms are more common during acute types or acute exacerbations of the pulmonary tuberculosis. The symptoms referable probably to the intestinal tuberculosis are often more pronounced and more persistent than the referred symptoms. The cause or causes of the referred abdominal symptoms in pulmonary tuberculosis have not yet been definitely determined. It is likely that a number of different causes act to bring about these symptoms. Cooperation between the gastro-enterologist, the roentgenographer and the tuberculosis specialist will eventually solve the problem.

Virginia Medical Monthly, Richmond

61: 127-188 (June) 1934

Pituitary Hormones: Review. R. J. Main, Richmond.—p. 127.
*Résumé of Five Hundred Consecutive Pituitary Cases Occurring in General Neurologic Practice. B. R. Tucker, Richmond.—p. 131.
Pellagra. W. H. Sebrell, Washington, D. C.—p. 136.
Treatment of Pellagra: Critical Review. S. D. Blackford, University. —p. 140.
Lesions of the Cervix Uteri. C. W. Doughtie, Norfolk.—p. 143.
Carcinoma of the Uterus. E. S. Groseclose, Lynchburg.—p. 148.
Phasicity of Function. F. C. Pinkerton, Pinehurst, N. C.—p. 153.
The Latest Development in the Treatment of Fractured Spines. J. T. Tucker, Richmond.—p. 154.
Nonoperative Treatment of Hemorrhoids. D. D. Vance, Bristol, Tenn. —p. 160.
Division of Pleural Adhesions in the Pneumothorax Treatment of Pulmonary Tuberculosis. E. C. Drash and O. N. Shelton, University. —p. 163.
Typhus and Rocky Mountain Spotted Fever. W. F. Draper, Richmond. —p. 171.
Hospitalization by the Group Payment Plan. R. W. Garnett, Danville. —p. 175.

Pituitarism in Neurologic Practice.—Tucker states that the clinical signs and roentgen observations of his 500 cases of pituitary disorders concomitant with neurologic disorders coincided in the majority of instances. The basal metabolic rate showed a decided tendency to be decreased in hypopituitarism. There were an equal number on each side of the zero point in hyperpituitarism. The influence of the other endocrine glands and the difference in the function of the two lobes of the hypophysis must be considered, as the oversecretion of the anterior lobe is more frequent than that of the posterior lobe and is believed to have little or nothing to do with metabolism. Blood sugar estimations in the hypopituitary cases did not conform in percentage to the "low sugar, high tolerance" ratio that is generally accepted. The sugar level in hyperpituitarism showed a definite tendency to be increased above the normal. No reduction can be drawn from the blood calcium estimation. Attention, however, is called toward decreased calcium content in hypopituitarism and hyperpituitarism. Twenty-one per cent of hypopituitary cases, 12 per cent of conduct disturbance and 23 per cent of bitemporal headaches originated in adolescence. Evidence of disorder in other endocrine glands is noticeably present in more than 25 per cent of the cases analyzed. Closer observation of clinical evidence and research in the biochemical field as an aid in differential diagnosis of endocrine disorders is desired.

West Virginia Medical Journal, Charleston

30: 241-288 (June) 1934

Some Personal Experiences in Gallbladder Surgery: Report of Six Hundred and Seventy-Four Operative Gallbladder Cases. J. E. Cannaday, Charleston.—p. 248.
Acute Cerebral Complications of "Nephritis." G. M. Lyon, Huntington. —p. 255.
Hypertensive Heart Disease. G. H. Barksdale, Charleston.—p. 256.
Crossroads in Medicine. R. Wolfe, Elkins.—p. 260.
Ultraviolet in Postoperative Treatment of Radical Mastoidectomies. A. P. Hudgins, Hinton.—p. 265.
Diagnosis and Office Treatment of the More Common Gynecologic Problems. J. H. Steenbergen, Huntington.—p. 267.
Considerations of Heart Pathology. I. H. Smith, Parkersburg.—p. 272.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Pickett-Thomson Research Lab., London

10: 641-1558 (May) 1934

*Influenza, with Especial Reference to the Complications and Sequelae, Bacteriology of Influenzal Pneumonia, Pathology, Epidemiologic Data, Prevention and Treatment: Part II. D. Thomson and R. Thomson. —p. 641.

Review of Literature on Influenza.—The monograph (two volumes) of the Thomsons on influenza consists of forty-six chapters, with an addendum, references to the literature and a subject and author index. In their summary under treatment of influenza they state that good results have been claimed by methods which directly stimulate a leukopoiesis. Willmore and Gardner-Medwin found that injection of sodium nucleinate and the giving of large doses of alkali at the same time to neutralize the toxins in the system were beneficial. Other observers claim good results by inducing fixation abscesses. Petranyi claims successful results in the treatment of babies and young children with large doses of amidopyrine. It must be concluded, however, that there is no definite specific remedy for influenza. In consequence, treatment has to be directed to the clinical symptoms and condition of the patient, and to the relief of any prominent symptoms and complications. The most important measures in the authors' opinion in the treatment of influenza are as follows: 1. The patient should go to bed at once, however mild the case, and remain in bed until the temperature has been normal for two days. 2. The intestine should be cleared out daily, or twice daily, as an attack tends to induce constipation. 3. The patient should be kept warm and encouraged to perspire by means of hot bottles and hot drinks. A powder of ipecac and opium at night is excellent. 4. Stimulants should be given, not at the beginning but toward the end of the attack, and more especially during convalescence.

British Journal of Physical Medicine, London

9: 1-20 (May) 1934

The Chart: Nature and Production of Electromagnetic Radiation: Scientific Review of the Chart. B. D. H. Watters.—p. 3.
Id.: Gamma Rays in Radium Therapy. H. S. Souttar.—p. 5.
Id.: Medical Uses of X-Rays. J. F. Carter-Braine.—p. 6.
Id.: Action of Ultraviolet Rays. L. Hill.—p. 7.
Id.: Value of Visible Light Rays. C. E. Iredell.—p. 8.
Id.: Medical Uses of Infra-Red Rays. W. A. Troup—p. 8.
Id.: Electromagnetic Currents in Diathermy on the Action of Currents Which Oscillate with the Periodicity of Those Employed in Diathermotherapy; viz., 500,000 to 1,500,000 per second. E. P. Cumberbatch. —p. 9.
Id.: Short Hertzian Waves in Medicine. T. Reiter.—p. 10.
Ultraviolet Radiation in Dental Surgery. J. E. Curnock.—p. 12.
The Influence of Radiation on Metabolism. L. Pincussen.—p. 14.
Physical Methods in the Treatment of Disease. C. Nicory.—p. 16.

British Medical Journal, London

1: 931-972 (May 26) 1934

Principles of Psychotherapy as Applied to General Practice. C. S. Read. —p. 931.
*Inadequate Immobilization and Nonunion of Fractures. R. W. Jones. —p. 936.
Hyoscine Amnesia in Labor: Analysis of Fifty Cases. T. Barnett. —p. 940.
Some Observations on Sympathetic Nervous System. E. R. Flint.—p. 942.
Influence of Emulsions of Oils and Fats on the Action of Bacterial Toxins. G. N. Myers.—p. 945.

Nonunion of Fractures.—Jones states that nonunion of fractures is almost always avoidable and is a complication entirely within the control of the surgeon. Many physiologic and biochemical factors may be concerned in the rate of union of fractures, but the only factor that is of practical importance in determining nonunion is inadequate immobilization. Immobilization may be inadequate in that the fracture is allowed movement within the splints or plaster, rotatory movement is especially inimical to union, and immobilization is not continued for a sufficiently long period. There can be no fixed period of immobilization for any fracture; the average duration of immobility may be exceeded in occasional cases by many months. Hyperemic decalcification and ischemic recalcification of bone must be accepted as pathologic facts. The initial traumatic hyperemia mobilizes calcium salts from the bone ends but rapidly subsides and allows recalcification of the young connective tissue to form callus. With final repair and fibrosis the callus consolidates by increased calcification. If the hyperemia is perpetuated by the trauma of movement there is excessive decalcification—a crack fracture becomes a gap fracture. This is the first stage of nonunion. In the final phase of ischemic fibrosis the surfaces of the fragments undergo sclerosis; this is the second stage of nonunion. The two stages of nonunion are distinguishable roentgenographically. The first is cured by immobilization. In the second, preliminary revascularization is necessary by a drilling or grafting operation. The infected compound fracture is pathologically similar to the simple fracture, except that the initial stage of decalcification is prolonged. If it is immobilized, the fracture will usually unite. An old infected fracture that has not been immobilized is in the first stage of nonunion so long as the infection is active but passes into the second stage of nonunion after quiescence of the infection. In the first stage, sequestrectomy without "scraping," followed by immobilization, determines union. In the second stage a revascularizing operation is necessary. Even if the operation is followed by a flare of infection, the fracture still unites if it is immobilized.

Clinical Journal, London

63: 177-220 (May) 1934

Acute Thoracic Empyema. C. P. Thomas.—p. 177.
*Diagnosis and Prevention of Infections of the Urinary Tract. T. E. Hammond.—p. 184.
Pyrexia of Doubtful Origin in Children. B. Schlesinger.—p. 191.
The Examination of the Chest. E. Ward.—p. 196.
Obstetric Errors. E. F. Murray.—p. 202.
Starvation Hypoglycemia: Case. S. W. Smith and H. Blair.—p. 206.

Infections of the Urinary Tract.—Hammond states that it is only when a ureter is completely obstructed or when an abscess is developing in the substance of the kidney that an infection can exist without its presence being revealed by pus or bacteria in the urine. When pus is present the urine may be turbid, but turbidity may be due to phosphates. When bacteria are present in large numbers, the urine may present an opalescent appearance, and a shimmering appearance when held up to the light. Having proved that some infection is present, one must find from what part of the urinary tract it comes and what is the pathologic lesion giving rise to it. When an inflammation is limited to the anterior urethra, the pus and bacteria are swept out by the first portion of urine. This is the basis of the two-glass test. The author believes this to be somewhat crude and proposes the following method: The meatus is first examined to see whether it is inflamed; the finger is then pressed along the floor of the urethra, and any discharge is collected on a slide. The anterior urethra is then washed out with physiologic solution of sodium chloride flowing from a container placed two feet above the level of the patient. The wash-out contains the secretion of the anterior urethra and is collected in the first glass. About 2 ounces of urine is then passed into the second glass; this holds the contents of the posterior urethra. About 2 ounces of urine is passed into the third glass; this shows the condition present in the bladder. A finger is then inserted into the rectum, the prostate is massaged and 2 ounces of urine is passed into a fourth glass. The turbidity of the contents of the glasses is noted and each is examined for pus. If the second, third and fourth glasses contain pus, there is some cystitis; but if the second contains more, there is a posterior urethritis. If the fourth contains more, there is associated prostatitis. In the prevention of infection, methenamine should be given both before and after operations, and during the last few months of pregnancy and during the puerperium. In the large pyonephrosis in women in whom nephrectomy has to be performed, the history of lumbar pain often dates back to a previous pregnancy. It is probable that the dilatation of the pelvis persists, and the kidney may be gradually converted into a pyonephrosis. Consequently, when a pyelitis has arisen during pregnancy, three months after its termination, an excretion urography should be carried out to make certain that the kidney is functioning properly. If not, a catheter should be passed up the ureter and retained for four hours. When urinary symptoms persist after pregnancy, one should find whether there is any residual urine. If so, a catheter should be passed each day and the bladder irrigated with silver nitrate. This should be continued for five days after the residual urine disappears.

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Edinburgh Medical Journal

41: 341-400 (June) 1934

Perspectives in Physiology. I. deB. Daly.—p. 341.
*Relation of the Peripheral Lymphatic System to Spinal Cord. Elizabeth Gilchrist.—p. 359.
Some Problems in the Growth and Developmental Mechanics of Bone. J. C. Brash.—p. 363.

Relation of Lymphatic System to Spinal Cord.—Gilchrist exposed the sciatic nerves of a series of rabbits and injected suspensions of various pigments in sterile distilled water into and round the nerve. After periods varying from a few hours to fifteen days, during which the animals were allowed free movement, they were killed. The sciatic nerve, from the site of injection to its entrance between the vertebral columns, and the lower part of the vertebral column together with the spinal theca and cord were removed. After decalcification in Perenny's solution for the requisite time, the bone was cut away and microscopic preparations were made of the nerve trunk, theca and spinal cord. The experiments indicate that particulate matter, as distinct from fluids, gaining entrance to the tissue spaces round the peripheral nerve or gaining entrance to the nerve bundle itself does not pass centrally in the endoneurium or between the individual nerve fibers for any appreciable distance. Bacteria of such size as to be within the range of microscopic vision do not commonly reach the spinal cord or its meninges by the lymphatic channels associated with the peripheral nerve trunks.

Indian Medical Gazette, Calcutta

69: 241-300 (May) 1934

Study of Vitamin A Deficiency in Ceylon, with Especial Reference to the Statistical Incidence of Phrynoderma and "Sore Mouth." L. Nicholls.—p. 241.
*Dysentery Produced by Bacterium Pseudocarolinus. R. N. Chopra and R. N. Chaudhuri.—p. 251.
Thyroid Extract in Prostatic Enlargement. H. Smith.—p. 254.
Acute Bacillary Dysentery in Children: Advantages of Its Treatment by Petroleum and Allied Preparations. T. H. Gunewardene.—p. 256.
Cilia in the Anterior Chamber and Traumatic Cyst in the Iris. M. D. Anklesaria.—p. 259.
Antitoxic Immunity to Diphtheria Among a Group of Indians in Nainital District, U. P., India, as Evidenced by the Schick Tests. A. N. Das.—p. 261.

Dysentery Produced by Bacillus Pseudocarolinus.—Chopra and Chaudhuri isolated Bacillus pseudocarolinus from the stools of forty patients, twenty-eight of whom had definite gastro-intestinal symptoms. Nine showed the signs and symptoms of subacute dysentery of the bacillary type, eleven suffered from diarrhea only, two had constipation alternating with diarrhea, and six had pain in the abdomen. Another group of four patients were admitted with skin conditions pointing to intestinal allergic manifestations; viz., one had psoriasis, two had pityriasis rubra and one had urticaria. The remaining eight patients were admitted for other causes; i. e., three had fever, one diabetes, one chyluria, one myocarditis, one anarsarca and one an infection with Tinea violaceum. The last twelve patients, although they were admitted to the hospital for other causes, also suffered from definite symptoms pointing to gastro-intestinal disturbance. Most of the patients complained of flatulence, distention and vague abdominal pains. Some had tenderness in the epigastrium, others showed symptoms of typical bacillary dysentery of a subacute type, while still others suffered from chronic intestinal stasis with symptoms of constipation alternating with diarrhea. Roentgenograms showed stasis of the large intestine. Most of the patients were anemic. Microscopic examination of the stools revealed associated protozoal and helminthic infections. In the stools of nine patients Endamoeba histolytica was found, in one a large number of spirochetes, in six hookworm eggs and in seven Giardia intestinalis. In a certain number of these patients there were multiple infections, but in none was a combined infection with Bacillus pseudocarolinus and Flexner or Shiga dysentery organisms found. Bacillus pseudocarolinus was isolated from all the cases. Agglutination was positive in eight cases, five giving the reaction in a dilution of 1:160, one in 1:80 and one in 1:10. Negative results were obtained in twenty-one cases. The strains isolated were tested with stock dysentery bacteriophage in sixteen cases, but only in eight were the bacilli lysable in vitro by the bacteriophage used. Even after treatment with bacteriophage the infection could not be eradicated in most cases and Bacillus pseudocarolinus was isolated from the stools.

Journal of Pathology and Bacteriology, Edinburgh

38: 253-512 (May) 1934

Further Observations on the Influence of Testicular Extract on the Rate of Absorption of Diphtheria Antitoxin and on the Response to Immunization with Toxoid. D. McClean, W. T. J. Morgan and G. Favilli.—p. 253.
*Constitutional Abnormality of the Polymorphonuclear Leukocytes with a Record of the Leukocytes for a Period of One Year. A. F. B. Shaw.—p. 259.
Further Observations on Fat Mobilization in Starvation. J. H. Dible and J. Libman.—p. 269.
The Phage Inactivating Agent of Bacterial Extracts. F. M. Burnet.—p. 285.
Chemical Nature of the Phage Inactivating Agent in Bacterial Extracts. G. A. C. Gough and F. M. Burnet.—p. 301.
The Genus Monilia. J. F. D. Shrewsbury.—p. 313.
Bacterial Fluorescence with Ultraviolet Light. R. J. V. Pulvertaft.—p. 355.
In Vitro Study of the Action of Immune Bodies Called Forth in the Blood of Rabbits by the Injection of the Flagellate Protozoon Bodo Caudatus. Muriel Robertson.—p. 363.
Xerophthalmia, Trigeminal Degeneration and Vitamin A Deficiency. E. Mellanby.—p. 391.
Virulence of Bacillus Typhosus and Resistance to O Antibody. A. Felix and R. M. Pitt.—p. 409.
*Edema in Experimental Nephritis. J. S. Dunn, E. G. Oastler and S. L. Tompsett—p. 421.
Inflammation in the Caterpillars of Lepidoptera. G. R. Cameron.—p. 441.
Study of Twelve Strains of Bacillus Necrophorus, with Observations on the Oxygen Intolerance of the Organism. W. I. B. Beveridge.—p. 467.
Bactericidal Properties of Adrenal Extracts. J. Gordon and J. C. Knox.—p. 493.

Constitutional Abnormality of Polymorphonuclear Leukocytes.—Shaw describes a case of persistent left handed deflection of the polymorphonuclear count associated with an abnormally complex nuclear configuration of all the class I cells. There was no nuclear change in the other leukocytes and the total and differential counts were normal. It is claimed that the condition is a constitutional abnormality of the polymorphonuclear leukocytes. Hereditary transmission was not found, but the evidence is incomplete. No record of a similar case has been found in the literature and the condition differs in certain important respects from "Pelger's familial anomaly of nuclei." The annual curve of the total leukocytes is recorded. All the high peaks fall within normal limits, but the polymorphonuclear count shows that some of them are physiologic and others are due to infection. There is no seasonal variation in the total leukocytes, and the range of variation in the year is the same as in one person in twenty-four hours but less than in a population. The number of leukocytes is therefore a character of the patient. Oscillations of the annual total leukocyte curve were determined exclusively by the total polymorphonuclear cells. The variation in the proportion of the different types of leukocytes in the year is the same as in one person in twenty-four hours or in a population examined once, and so the variation in the relative numbers is the same as in healthy persons. There is no seasonal variation and in this respect man resembles the pigeon. The total lymphocytes remained constant during the year. Solar radiation appeared to be the only factor that produced a seasonal variation. The relation of the annual curves of the total leukocytes, the percentage of polymorphonuclears and the percentage of lymphocytes was associated with the stability of the total lymphocytes. The total monocytes, eosinophils and basophils showed no seasonal change. There was no seasonal variation in the polymorphonuclear count, which remained steady throughout the year unless disturbed by infection. The series of changes produced in the count by certain infections is recorded.

Edema in Experimental Nephritis.—Dunn and his associates produced extensive subcutaneous edema and serous transudates in nephritis by corrosive mercuric chloride, potassium bichromate and uranium acetate when the renal lesions were severe enough and the animals ingested a sufficient amount of fluid. The greater liability to edema in uranium nephritis is probably due to the severe damage to renal structure and function which it causes, combined with low general toxicity and noninterference with nutrition. The essential cause of the edema in experimental tubular nephritis is failure of the kidney to excrete sufficient fluid. Oliguria is due to failure of the damaged renal tubules as conducting channels.

Lancet, London

1: 1101-1154 (May 26) 1934

Childhood Type of Tuberculosis. L. G. Parsons.—p. 1101.
Oliguria and Albuminuria in Bright's Disease. J. S. Dunn.—p. 1107.
Spinal Anesthesia. H. K. Ashworth.—p. 1112.
Calcification and Ossification in the Semilunar Cartilages. H. A. Harris. —p. 1114.

Medical Journal of Australia, Sydney

1: 549-578 (April 28) 1934

Medical Names in Australian Geographic Nomenclature. J. B. Cleland. —p. 549.
Method of Feeding Concentrated Milk Mixtures to Infants. Kate Campbell.—p. 557.
Treatment of Dorsal Displacement of the Little Toe. N. D. Royle. —p. 560.
Virulence Testing in Diphtheria. W. C. Sawers and A. H. Baldwin. —p. 560.

1: 579-612 (May 5) 1934

Some Aspects of Congress. W. K. McIntyre.—p. 579.
Toxicology of Duboisia and Anthocercis. J. MacPherson.—p. 583.
*Observations on Phosphate Excretion in Normal and Toxemic Pregnancy. Vera I. Krieger.—p. 585.
Pathologic Lesions Met with in the Esophagus During Postmortem Examinations. J. B. Cleland.—p. 588.
Surgical Treatment of Dislocated Meniscus of the Knee Joint. N. D. Royle.—p. 589.

1: 613-646 (May 12) 1934

Interpretation of Systolic Murmurs. G. A. Lendon.—p. 613.
Etiology and Treatment of Puerperal and Nonpuerperal Pelvic Inflammation. A. Sherwin.—p. 617.
Some Notes on the Ear in Relation to Head Injury. H. B. Harwood. —p. 621.

1: 647-674 (May 19) 1934

Report of a Series of Cases of Cancer of the Cervix Uteri Treated Between 1922 and 1929 with Surgery, Radium and X-Rays. F. A. Maguire.—p. 647.
Malignant Tumors of the Ovary. Constance E. D'Arcy and Leila K. Keatinge.—p. 652.
Review of a Series of Thirty Cases of Malignant Disease of the Ovary. F. A. Maguire.—p. 660.

Phosphate Excretion in Pregnancy.—Krieger investigated the value of the glycerophosphate test by the method of Bram and Key in a series of normal women, normal pregnant women and toxemic pregnant women. The test was compared with the blood urea and urea concentration tests. An analysis of the results showed no correlation between these renal function tests and the phosphate excretion. In several cases high blood urea, low urea concentration and low phosphate excretion seemed to confirm the agreement of the test with tests already in common use. On the other hand, many cases showing normal blood urea, normal urea concentration and a normal clinical history gave low values for the excess phosphate excretion. Again, many cases showing low figures for the urea concentration test and a normal blood urea showed much higher excess phosphate excretion than other cases in which the renal function, as assessed by the urea concentration test, was much more satisfactory. These results therefore show that this test seems to have no value whatever as a test for kidney efficiency in pregnancy. Even in normal pregnancy only 18 per cent of the patients examined showed an excretion of excess phosphate as high as 150 mg. per hour, which is the value quoted as the minimal excess excretion for normal kidneys. In a small group of normal nonpregnant women the average excess phosphate excretion was 169 mg. per hour, only one figure falling below the minimal figure of 150 mg. per hour. In the toxemic group, only 5 per cent of the cases gave values above the minimum. There was only a 62 per cent agreement between the urea concentration test and the excess phosphate excretion, when 90 mg. per hour excess phosphate excretion was arbitrarily used as the minimal value.

Practitioner, London

132: 641-732 (June) 1934

Nonmalignant Conditions of the Tongue. S. Cade.—p. 641.
Salivary Glands, in as Far as the Mouth is Concerned. H. Bailey.—p. 651.
Congenital Deformities of the Mouth. D. Browne.—p. 658.
Stomatitis. A. L. Spencer-Payne.—p. 671.
Inflammation of the Gums. H. W. Turner.—p. 683.
Tumors and Ulcerations of the Pharynx. R. S. Stevenson.—p. 690.
Present Position of Treatment of Varicose Veins. D. H. Patey.—p. 695.
Some Observations on Diagnosis of Silicosis. A. J. Amor and R. G. P. Evans.—p. 700.
"Essential" Hemorrhagic Purpura, with Transient Midbrain Symptoms. H. A. Dunlop.—p. 709.
Medicolegal Problems in General Practice: VI. Radiology in Relation to Medical Jurisprudence. S. G. Scott.—p. 712.

South African Medical Journal, Cape Town

8: 317-356 (May 12) 1934

Bilharziasis: I. Helminthology. H. O. Mönnig.—p. 319.
Id.: II. Pathology of South African Bilharziasis. A. Pijper.—p. 320.
Id.: III. Signs and Symptoms of Bilharziasis. B. Epstein.—p. 321.
Id.: IV. Treatment of Bilharziasis. W. H. L. Wronsley.—p. 323.
Id.: V. Bilharzia and the School. J. A. Kieser.—p. 323.
Id.: VI. Prevention of Urinary Bilharziasis. E. H. Cluver.—p. 325.
Common Disorders Among Adult Male Xosas and Fingoes in the Border Districts. A. W. Burton.—p. 327.
The Doctor as a Fanatic and a Hypocrite. D. Serfontein.—p. 337.
Survey of the State of the Medical Profession in South Africa. A. Bloom.—p. 340.

8: 357-396 (May 26) 1934

Medical and Health Aspects of Aviation in the Union. E. N. Thornton. —p. 359.
The Functions of the Thyroid. W. A. Jolly.—p. 366.
Heredity and Disease: The Story of the Abbe Gillet's Rabbits. J. H. Sequeira.—p. 369.
Recovery of Sight and Health in Gigantism. E. A. Seale.—p. 371.
South African Official Mental Hygiene Scale of Intelligence Tests and Its Clinical Application. Alice Cox.—p. 373.

Chinese Medical Journal, Peiping

48: 323-414 (April) 1934

Some Notes on the Anti-Schistosomiasis Japonica Campaign in Chih-Huai-Pan, Kaihua, Chekiang. H. C. Kan and Y. T. Yao.—p. 323.
*De Rivas Treatment in Dysentery Cases. Ruth V. Hemenway.—p. 337.
Obstetrics in Hainan: Statistical Study of Two Hundred and Fifty Maternity Cases. N. Bercovitz and Y. L. Tang.—p. 342.
Obstetric Service of the American Presbyterian Hospital, Hoihow, Hainan. N. Bercovitz.—p. 347.
*Action of Viosterol and Parathormone as Studied in Thyroparathyroidectomized Dogs Fed an Artificial Diet Rich in Calcium and Phosphorus. J. W. Spies, R. H. Wilson and J. A. Stringham.—p. 352.
Repair of Harelip Under Bilateral Infra-Orbital Nerve Block at the Infra-Orbital Foramina. P. C. Nyi.—p. 373.
Amebic Liver Abscess in Manchuria, with Especial Reference to Intraperitoneal Rupture. C. Chang and D. S. Robertson.—p. 375.
Mycosis Fungoides: Report of Case. L. F. Heimburger.—p. 381.

Results of the De Rivas Treatment in Dysentery Cases.—Hemenway has used the De Rivas treatment in twenty cases of dysentery, amebic and bacillary, of which nineteen were cured and one was unimproved. The red cell counts of the group varied from 1,584,000 to 3,280,000, while the white cell counts ranged from 3,100 to 8,700, and the hemoglobins ran from 30 to 80. All stools contained blood and mucus. The treatment for the eradication of parasites of the large intestine is recommended for amebic and balantidic dysentery, trichomonas, oxyuris and other protozoa and metozoic disturbances of the large intestine. The patient lies on the right side with the hips elevated. An ordinary stomach tube is used for insertion in the rectum. This is connected with a glass Y tube, one end of which leads to an enema vessel and the other to a pail. There are stopcocks on both ends. The rectal tube is inserted slowly, and sufficient fluid is admitted to balloon out the intestine so the tube may be pushed up into the ascending and transverse colon; then a rectal thermometer is inserted. The enema vessel contains 5,000 cc. of a 1:5,000 solution of copper sulphate at a temperature of from 52 to 55 C., which flows into the colon at the rate of from 100 to 150 cc. a minute. A patient may be given 1 or 2 liters. When the patient complains of pain the enema tube is closed off, that to the pail is opened and some of the solution is drained off from the intestine. After this the treatment may be continued and at its close the patient holds it as long as he can. The treatment is given three times a week for two months and then once a week for a month.

Action of Viosterol and Parathyroid Extract.—Spies and his associates studied the effects of vitamin D and the parathyroid principle on calcium and phosphorous interchanges in thyroparathyroidectomized dogs, with particular reference to any mutually related action which the two agents might have. They found that suitable doses of either viosterol or parathyroid extract elevate the serum calcium level, the curve of which approximately parallels those for the intensity of muscular responses to electrical stimuli and the urinary excretion of calcium. Within certain limits the serum phosphorus is inversely proportional to urinary phosphorus, serum calcium and urinary calcium. In general, the tendency of the parathyroid extract is to create a negative balance of calcium and phosphorus through increased elimination in the urine, while the tendency of viosterol is to produce a positive balance of calcium and phosphorus by the fecal excretion being diminished more than the urinary output is augmented.

Journal of Oriental Medicine, South Manchuria

20: 41-60 (April) 1934

Fluctuation of Glycogen in the Nerve Cells of the Central Nervous System of Animals in Morphinism. A. Hayashi.—p. 41.
Standardization of Vermicides (Carbon Tetrachloride Coefficient). T. Kodama and S. Suzuki.—p. 43.
Comparative Study of Vermicides. M. Kono and K. Shimizu.—p. 47.
*Lymphogranulomatosis Inguinalis: Report of Thirty-Seven Cases, Especially Clinical Findings of Cerebrospinal Liquid and Eyeground. K. Kitagawa.—p. 48.
Dermatomycoses in the New Independent State of Manchoukuo and Their Mycologic Studies. T. Terai.—p. 50.
Biliary Cirrhosis of the Liver in Atresia of Choledochus Duct: Contribution to Mode of Origin of Biliary Cirrhosis of the Liver in Man: Case. Y. Morikawa.—p. 51.
Nourishment of Anchylostoma Caninum and the Histologic Changes of Intestine Thereby Produced. A. Yamada and K. Inouye.—p. 52.
Outline of Whorls of the Feet of Chinese. S. Takeya.—p. 54.
Paratyphoid C: Case. S. Nagata and N. Hayashi.—p. 58.
Banti's Disease: Case. Y. Matsuura.—p. 59.
Comparative Study of Disinfectants. S. Nagata and K. Shimizu.—p. 60.

Cerebrospinal Liquid and Eyeground in Inguinal Lymphogranulomatosis.—Kitagawa observed the cerebrospinal liquid in thirty-seven cases of inguinal lymphogranulomatosis. In almost every case the pressure of the cerebrospinal liquid was abnormally high, but in the sitting posture it became variable and uncertain. The pressure in the prone position in seven cases was found to be from 200 to 420 mm. of water and in two cases from 140 to 150 mm. of water. Positive spinal fluid reaction for syphilis was indicated in nine cases: a positive Wassermann reaction in three and a positive Meinicke reaction in six. The colloidal gold reaction was negative in almost every case. The eye-ground was examined in thirty cases and edema in the fiber layer of the optic nerve surrounding the papilla, winding of blood vessels and increase of the capillaries were found in twenty-one cases. The causes of abnormality of the cerebrospinal liquid and of the eyeground are not clear, but the author believes that inguinal lymphogranulomatosis is a general disease affecting the central nervous system. Frei's skin test was carried out on 160 persons with the thought that the skin test was specific for inguinal lymphogranulomatosis, but Frei's antigen taken from the mixed inguinal lymphogranulomatosis was not an absolute specific, so that Frei's antigen should be made from the pus of pure inguinal lymphogranulomatosis.

Presse Médicale, Paris

42: 721-744 (May 5) 1934

*Plateau Form of Oscillometric Curves. H. Vaquez, M. Mouquin and P. Gley.—p. 721.
Cancer of Penis. C. Lenormant.—p. 723.
Gastroduodenal Ulcer: Treatment. L. de Beco.—p. 726.
Suprarenalectomy, Arterial Hypertension and Renal Insufficiency. H.-R. Olivier and J. Meillère.—p. 729.

Plateau Form of Oscillometric Curves.—Vaquez and his collaborators discuss the oscillometric curves produced by the passage of blood through arteries. If an extremity is surrounded by an armlet containing air under pressure, the intravascular waves connected with the progression of blood produce oscillations in the gaseous medium which are easy to record. The normal state of the oscillometric waves thus obtained is expressed by a progressive rise, followed by a progressive fall. Sometimes, however, the waves for a certain distance will be of the same height, and this phenomenon is called "plateau form." Abnormally narrow caliber of the artery or excessive volume of the blood wave are the only conditions that produce this type of wave. The authors were able to demonstrate this fact experimentally by the use of an apparatus described by Fabre. From the clinical standpoint the plateau form must be considered abnormal. It may usually be observed in patients with aortic insufficiency, pulse retardation (Adams-Stokes' syndrome) or arterial hypertension. In the case of aortic insufficiency the plateau form, if not constant, is at least frequent. By itself it is not a bad prognostic sign, especially if it can be reduced by the usual methods or by immersion of the hands in hot water; but complicated or of arterial origin, the irreducible plateau form is an element of serious prognosis. The absence of the plateau form in arterial hypertension is a good sign. In general the authors believe that the existence of the plateau form of the oscillometric curve has a diagnostic, prognostic and therapeutic importance in patients having cardiovascular disease. It reveals unsuspected alterations of the arterial system with the hazards that they imply.

42: 745-760 (May 9) 1934

Spitters of Koch's Bacillus Without Apparent Lesion. F. Bezançon, P. Braun and A. Meyer.—p. 745.
*Late Renewal of Functions of Diaphragm After Phrenicectomy. R. Jeanneret, M. Ribet and P. Famé.—p. 748.
Immediate Massive Gastrectomy in Pyloric Stenoses. J. Duval.—p. 750.

Renewal of Function of Diaphragm After Phrenicectomy.—Jeanneret and his collaborators feel that the renewal of diaphragmatic function following phrenicectomy, usually performed for collapse therapy in tuberculosis recently reported by numerous observers, markedly increases the interest in the anatomic relations of the phrenic nerve. Frequently the tuberculous process simultaneously continues its evolution. Hence in some cases it is necessary to pass to another method of therapeutics and in others it is necessary to maintain the diaphragmatic paralysis as the best or sole method of therapeutic assistance. By reviewing the supply, course and anastomoses of the phrenic nerve, the authors conclude that this nerve and its accessories constitute the only route of motor and trophic innervation of the diaphragm. Consequently the removal of diaphragmatic functions necessarily indicates the reconstitution of a "circuit" uniting the cervical plexus to the diaphragm. Just how this occurs is difficult to determine with certainty. The available evidence favors regeneration of the phrenic nerve itself. If this is admitted, a second intervention on the phrenic nerve is legitimate to maintain the diaphragmatic immobilization. This would involve search for the principal regenerated trunk at the level of the old scar. If the search should fail, Goetze's operation should be performed. The latter would be based on the hypothesis that the nerve regeneration had involved a phrenic accessory rather than the main phrenic trunk.

42: 761-784 (May 12) 1934

Tuberculous Contagion: Answer to Questions of M. Gismondi. A. Lumière.—p. 761.
*Clinical Study of Blood Urea-Urine Urea Relation. J. Cottet.—p. 762.
Rate of Glycemia in Negroes in French Equatorial Africa and Its Variations in Pathologic Conditions. Pales and Monglond.—p. 765.

Blood Urea-Urine Urea Relation.—Cottet measures the urea in an exact twenty-four hour specimen of urine. The urea is also measured in a sample of blood taken at the end or soon after the end of collection of the urine specimen. The figures which express in centigrams the amount of blood urea are divided by those which express in grams the quantity of urea contained in the urine of twenty-four hours. The quotient of this division, multiplied by 100, gives the relation of amount of blood urea to the urinary urea. The value of this procedure depends on three factors: (1) the secretory power of the kidneys, (2) the quantity of urinary urea in twenty-four hours, which, in states of nitrogen equilibrium, is related to the quantity of absorbed albuminoids, and (3) the quantity of urinary fluid in twenty-four hours. The author concludes, as a result of more than 1,000 observations, that the value of the relation varies between 1 and 2 in subjects having a normal renal secretory power with the urea and aqueous twenty-four hour excretion at least equal to 15 Gm. and 1,500 cc., respectively. Under these conditions the value is raised proportionately as the renal secretory power is diminished. The author concludes that this relation furnishes a simple means of evaluating the functional activity of the kidneys. It also shows the important part played by aqueous diuresis in the activity of renal functioning. The influence of aqueous diuresis on renal function and on urea secretion is well illustrated by the syndrome of azotemia of nonrenal origin with oliguria, the pathogenesis of which is thus explained.

Clinica Chirurgica, Milan

37: 329-436 (April) 1934

Teratoma of Anterior Mediastinum Complicated by Left Pulmonary Abscess: Operation, Cure. A. Slaviero.—p. 329.
Congenital Inguinosuperficial Hernia (Kuester's Hernia). V. Consiglio. —p. 342.
*Studies in Pus Reaction. A. De Blasi.—p. 397.
*Actinomycosis of Gallbladder. G. Lino.—p. 418.

Studies in Pus Reaction.—On the basis of a colorimetric determination of the pus reaction of seventy-three patients with various pulmonary diseases, De Blasi found a hydrogen ion concentration of 7.29, a weak alkaline reaction, in pus from chronic abscesses, and a hydrogen ion concentration of 6.22,

a definite acid reaction, in pus from acute abscesses. Pus from chronic abscesses with mixed infection shows an analogous reaction to pus from acute abscesses. This difference in reaction may be helpful in the diagnosis of the nature of an abscess in doubtful cases. The author states that determination of the hydrogen ion will become simple and exact in the future. A high acidity rate in pus from chronic abscesses indicates a serious course and prognosis. Acidosis from pus of acute abscesses does not seem to be related to the microorganism but is constantly in relation with diverse bacterial species. The acidosis is more intense in young patients. The author refers particularly to inflammatory acidosis and to the biologic significance of the abscess.

Actinomycosis of Gallbladder.—Lino states that the great resistance of the epithelium of the gallbladder to Actinomyces at the lumen of the gallbladder explains why actinomycosis rarely occurs in that site. Actinomyces in the liver is sometimes eliminated with the bile and arrives in the gallbladder. But actinomycosis of the liver is a rare condition and thus is seldom transmitted to the gallbladder. Conditions capable of facilitating the implantation of the micro-organisms and diminishing the resistance of the cholecystic epithelium to the actinomycotic infection are infrequently found. There is little possibility of a rapid spontaneous cure of the actinomycotic granuloma.

Minerva Medica, Turin

1: 721-752 (May 26) 1934

Bürger's Syndrome. A. Gasbarrini.—p. 721.
Case of Indigenous Kala-Azar in Adult and Anemic Form of Visceral Leishmaniasis. G. Oliva.—p. 727.
*Importance of Calcium Oxalate Crystals in Urinary Sediment. S. Maugeri and F. Nico.—p. 735.
Glycerophosphatase in Serum of Patients Presenting Osseous Tuberculosis. E. Egidi and P. Rowinski.—p. 737.
New Trends in Medical Treatment of Hepatic Colic. P. Alessandrini.—p. 739.

Calcium Oxalate Crystals in Urinary Sediment.—Maugeri and Nico examined the urine of 100 subjects to determine the ratio of calcium and oxalate acid to calcium oxalate crystals. They found the crystals present in both alkaline and acid urine, but in larger amounts in the latter. The crystals were generally observed in urine with a high proportion of calcium. They usually occur in urine containing more than 30 mg. of calcium per hundred cubic centimeters and seldom in urine containing less than 20 mg. of calcium per hundred cubic centimeters. The rate of oxalic acid in the urine rarely amounted to more than 7 mg. per hundred cubic centimeters. The authors consider the presence of calcium oxalate crystals in the urine an indication of altered oxalic acid metabolism. The crystals were not observed in urine which, despite a high rate of oxalic acid, only presented a small amount of calcium. They define the presence of the crystals in the urine as calciuria and not as oxaluria.

Archiv für Verdauungs-Krankheiten, Berlin

55: 249-372 (May) 1934

Observations on Banti's Disease and Similar Conditions. M. Einhorn.—p. 249.
*Late Gastro-Intestinal Sequels After Bacillary Dysentery. A. Ohly.—p. 254.
Investigations on Utilizability of Sodium Chloride Substitutes in Cookery. W. Recke.—p. 274.
Clinical Aspects of Early Forms of Liver Diseases: Hepatitides and Precirrhoses. P. A. Barchasch.—p. 282.
Incidence of Diabetes Mellitus Among Poorer Groups of Population. S. Drucker.—p. 297.
*Changes of Tongue in Gastroduodenal Ulcer. M. Dobreff.—p. 306.

Late Sequels After Bacillary Dysentery.—Ohly mentions the various infectious gastro-intestinal disturbances that occurred during the war and points out that among them bacillary dysentery is of especial significance because of its late sequels. When the history of a patient reveals that at one time he has had mucosanguineous diarrheas with tenesmus and fever, it is likely that he has suffered from a dysentery-like disorder. The anamnesis of many of these patients with postdysenteric disorders reveals that ever since the attack of dysentery the gastro-intestinal tract has not functioned properly. These persons complain of gastro-intestinal disorders particularly after dietary mistakes and after exposure to cold. Bacteriologic examination of the stools generally gives negative results, but, since the agglutinins of dysentery are characterized by great stability, the serologic detection of a former dysentery may eventually become possible; but the author admits that fourteen or eighteen years after the attack of dysentery a positive serologic test is rare. However, even if both bacteriologic and serologic tests give negative results, a dysenteric sequel is nevertheless likely if the anamnesis discloses dysentery in the past history of the patient. Irritation of the mucous membrane of the colon is noteworthy in the symptomatology of the post-dysenteric sequels. The roentgenogram occasionally reveals changes, particularly in the spastic-hyperalgesic forms, but a mild catarrh of the mucous membrane is not detectable by roentgenoscopy. After describing the pathologic aspects and the examination of the feces and the conditions of acidity of the stomach, the author discusses the fever and the incidence of gastroduodenal ulcers in postdysenteric disturbances. Foods containing large amounts of cellulose, or fatty and bloating foods, particularly when taken together with cold drinks, cause relapses. If the relapses are accompanied by fermentation dyspepsia, the author advises a day of fasting on which the patients take only black tea with some wine. Then follow three or four days during which all carbohydrates are excluded and a protein diet is given consisting of boiled meat, cottage cheese and eventually protein milk. If milk is given, it should be thinned with lime water. Then rice, toast and butter may be added and, after this diet has continued for eight days, cooked, strained fruits and vegetables are permissible, and later also mashed potatoes. Fresh fruits and bloating vegetables have to be excluded for several weeks.

Changes in the Tongue in Gastroduodenal Ulcer.—Dobreff observed 147 cases of gastroduodenal ulcer for the epithelial defects of the tongue, which Glaessner stated that he had seen in patients with gastroduodenal ulcer. The author found it in only one patient and concludes from this that the so-called ulcer tongue cannot have great symptomatic significance.

Deutsche medizinische Wochenschrift, Leipzig

60: 811-848 (June 1) 1934

Somatic Manifestation of Psychic Depression. I. H. Schultz.—p. 811.
Nematodes in Brain in Pellagra. G. Töppich.—p. 814.
*Increase in Rest Nitrogen and Loss of Sodium Chloride. E. Kohlschütter.—p. 817.
Treatment of Talipes Cavus. M. Schotte.—p. 820.
Diagnosis of Pregnancy from Urine. W. Hoffmann.—p. 822.
Treatment of Hay Fever. Kehr.—p. 824.

Increase in Rest Nitrogen and Loss of Sodium Chloride.—Kohlschütter points out that it has become possible to differentiate a special form of uremia characterized not by distinct anatomic changes in the kidney but by a deficiency in its sodium chloride content. The shortage of sodium chloride may be produced by frequent vomiting, severe diarrhea or other conditions that lead to a loss of fluid. The question has been asked whether therapeutic measures, particularly salyrgan injections, which lead to a considerable decrease in the water and sodium chloride content, also produce an increase in the rest nitrogen. The author's investigations revealed that there is no such danger. However, in order to be sure in every case, he recommends that whenever a high rest nitrogen value is found in the blood, the sodium chloride content should likewise be determined, and he thinks that thus it will be possible to avert the danger of a chloroprivic azotemia.

Jahrbuch für Kinderheilkunde, Berlin

142: 319-378 (June) 1934

Diastase in Urine of Nurslings and Children. F. Eckardt.—p. 319.
Blood Sugar Curve in Sugar Tolerance Tests During Childhood. S. A. Siwe.—p. 344.
*Demonstration of Virus of Encephalitis by Means of Vaccination of Cornea. K. Rupilius and J. Szekely.—p. 351.
*Cerebrospinal Fluid Reaction. J. V. Ambrus.—p. 359.
Symptomatology of Cerebral Disturbances in Whooping Cough. V. Mikulowski.—p. 364.

Demonstration of Encephalitis Virus by Vaccination of Cornea.—Rupilius and Szekely observed the corneas of rabbits that had been vaccinated with specimens of cerebro-

spinal fluid from twenty-eight children with various forms of encephalitis. The aspects of punctate superficial keratitis were produced in only a few cases. The authors admit that the cerebrospinal fluid of encephalitis may produce on the cornea of rabbits a punctate superficial keratitis, but, since the inoculation of nonspecific solutions may elicit changes that do not differ from punctate superficial keratitis, the method can have no diagnostic value. In view of this, other conclusions drawn from this test likewise become untenable; for instance, it can no longer be maintained that acute aseptic meningitis is caused by the same virus as encephalitis.

Cerebrospinal Fluid Reaction.—Ambrus discusses the cerebrospinal fluid reaction, which he described in the *Jahrbuch für Kinderheilkunde* (**140**:311 [Sept.] 1933; abstr. THE JOURNAL, Nov. 18, 1933, p. 1684). To 1 cc. of fluid is added 0.1 cc. of a 2 per cent distilled aqueous potash soap colloid as well as 0.1 cc. of a 20 per cent solution of sulphosalicylic acid. In the cerebrospinal fluids of healthy persons and in those from patients with acute cerebral and meningeal symptoms but without impairment of the meninges, a white turbidity develops, which after a certain period gathers on the surface of the fluid in the form of a white ring from 2 to 4 mm. in thickness, and the lower portion of the fluid gradually becomes as clear as water. In the meningitic cerebrospinal fluid, however, the coarsely flocculated precipitate rapidly sinks to the bottom. Recently the author studied the turbidity and flocculation conditions of the cerebrospinal fluids of patients in whom the meningeal and cerebral tissues are histologically impaired. He observed that the slightest changes in the protein content are revealed by his test. In cases of meningism the extremely fine granular turbidity floats in the fluid for several days. There is neither sedimentation on the bottom nor adsorption on the surface. Different variations occur that are related to the severity of the disease process. Some turbidities rise to the border of the lower third or the middle of the tube and remain there. Occasionally there are coarser turbidities that float like a net. In the cerebrospinal fluids of patients with poliomyelitis or encephalitis, a characteristic micella-like precipitate appears. The more pronounced the inflammatory character, the closer the cerebrospinal fluid resembles that of meningitis. Variations are numerous; there are cases in which the micella net floats for several days in the fluid, while in others it settles on the bottom within several hours. However, some micellas always remain in the fluid or adhere to the walls of the test tube. In the cerebrospinal fluid of basilar meningitis, a coarsely flocculated sediment quickly settles on the bottom. After fifteen minutes the precipitate has settled, and after forty-five minutes the upper fluid is as clear as water. The author stresses the advantage of his method over other cerebrospinal fluid tests and expresses the opinion that the turbidity and flocculation are determined by the amount and type of protein. The rapidity of sedimentation is likewise important and increases with the quantity of protein.

Klinische Wochenschrift, Berlin

13: 793-824 (June 2) 1934. Partial Index

Investigations on Melanophore Hormone: IV. Isolation of Melanophore Hormone. F. G. Dietel.—p. 796.
Argyroses, Particularly Those of the Eye. W. Gerlach.—p. 797.
Antibody Content of Animal Tissues Following Treatment with Thymus Extract. Alexandra Wasitzky-Strobl and A. Wasitzky.—p. 797.
*"Blood Group Ferment" and Blood Group Substance in Saliva. T. Satoh.—p. 798.
*Ultraviolet Rays and Iodine Content of Blood and Thyroid. C. Bennholdt-Thomsen and M. Wellmann.—p. 800.
Polyallelomorphism as Foundation of Hereditary Transmission of Spastic Spinal Paralysis. V. Hammerschlag.—p. 803.
Special Form of Ventricular Arrhythmia in Total Block. K. Luhr.—p. 807.
Action of Quinoline Derivatives on Gametocytes of Plasmodium Praecox. I. L. Kritschewski and A. I. Pines.—p. 807.
Experiments on Anaerobic Surface Culture. W. Bachmann.—p. 810.

"Blood Group Ferment" and Blood Group Substance in Saliva.—Satoh calls attention to the fact that in the feces and in the saliva processes take place that become manifest in a destruction of the blood group substance. These processes have been ascribed to the presence of the so-called blood group ferment. The author made further studies on the saliva, first on that of the A group, and found that irrigation of the mouth results in only a slight reduction of the blood group A substance and in an almost complete disappearance of the ferment action. Tests were made also on the saliva of the O group and it was observed that the group ferment directed against substance A is again largely removed by irrigation of the oral cavity, even though its disappearance is not quite as pronounced as in the saliva of the A group. These and other experiments seem to prove that the blood group substance rapidly reappears in the saliva or hardly disappears. The blood group ferment, however, is subject to great fluctuations and can be removed almost completely by simple irrigation of the oral cavity. The author thinks that these observations indicate that the blood group ferment in contradistinction to the blood group substance develops or increases autochthonously in the oral cavity.

Ultraviolet Rays and Iodine Content of Blood.—To determine whether a seasonal factor, the ultraviolet rays, or the administration of ergosterol influences the iodine content of the thyroid and of the blood, Bennholdt-Thomsen and Wellmann made experiments on rats. They found that rats that have been exposed to the quartz lamp or had been fed with viosterol had a high iodine content of the blood (40.5 and 31.05 micrograms, respectively, per hundred cubic centimeters) and a low iodine content in the dry thyroid substance (112 and 167 micrograms, respectively, per hundred cubic centimeters). The control rats that had not received this treatment but had been kept in dark cages had a low iodine content of the blood (25.25 micrograms per hundred cubic centimeters), but large quantities of iodine in the dry thyroid substance (211 micrograms per hundred cubic centimeters). The histologic examination of the thyroids revealed that the ultraviolet rays as well as the administration of viosterol resulted in a flat, resting epithelium without increase in the follicles, but a considerable accumulation of colloid, while in the absence of these factors the opposite was the result; that is, an increase in follicles, restless and increased epithelium and decreased quantities of colloid.

13: 825-864 (June 9) 1934

Infections by Anaerobic Bacilli. J. Zeissler.—p. 825.
*Observations on Gas Gangrene, with Especial Consideration of Serotherapy. G. E. Konjetzny.—p. 831.
*New Seroreaction for Tuberculosis. E. Meinicke.—p. 833.
Serology of Tuberculosis. F. Ernst.—p. 838.
Renal Point of Attack of Pressor Principle of Posterior Lobe of Hypophysis. R. Hauptfeld.—p. 839.
Vitamin C and Protein Bodies of Plasma. A. Böger and H. Schröder.—p. 842.
Capillary Reaction Following Sojourn on the Adriatic. R. Heller.—p. 843.

Gas Gangrene and Serotherapy.—Konjetzny points out that the value of the seroprophylaxis of tetanus is no longer disputed but that this is still the case in regard to gas gangrene. Some authorities have rejected it as entirely useless, while others have taken a stand against this depreciation of the seroprophylaxis of gas gangrene. The author reports nine cases of gas gangrene: seven developed following a street accident and two following surgical interventions. These cases show that the administration of the anaerobic serum in its present form does not prevent gas gangrene, because it developed in four cases in spite of the prophylactic administration of the serum. The author does not consider it entirely useless. The cases described took a comparatively mild course as the result of the serum prophylaxis. In three of the cases Fraenkel's bacillus was the cause of the gas gangrene, and in two others Fraenkel's bacillus and Novy's bacillus were found. The author assumes that the German anaerobic serums do not contain a sufficiently large protective dose against Fraenkel's bacillus. Serotherapy following the development of gas gangrene comes usually too late, but in spite of this it should not be left untried. None of the seven cases of gas gangrene that developed following a street accident were fatal. In five cases the extremity was saved, while amputation became necessary in two. The author recommends the prophylactic as well as the therapeutic use of anaerobic serum in street accidents.

New Seroreaction for Tuberculosis.—Meinicke reports that he has succeeded in preparing much better antigens than he employed for his first experiments with his clarification reaction for the serodiagnosis of tuberculosis. Moreover, in his first tests he employed only the centrifugation method, but these

improved antigens permit also a micromethod and a vault reaction. Four different antigens are used for the tuberculosis reaction: (1) a strong alcoholic tuberculosis antigen, (2) a weak alcoholic tuberculosis antigen, (3) an aqueous tuberculosis antigen and (4) an alcoholic control antigen, which is identical with the original standard extract for the Meinicke clarification reaction II. He discusses the significance of the seroreaction for tuberculosis. He maintains that it cannot be doubted that his tuberculosis reaction is a specific antibody reaction. The positive outcome of the test indicates either an active tuberculosis or that an active stage has existed until recently. The reaction may be helpful in the differential diagnosis, in the detection of cases of tuberculosis among larger groups and in determining the etiology of diseases of the eye, such as choroiditis and iritis, and of certain diseases of the bones and skin. In the prognosis the reaction may likewise become helpful, but it must be considered together with the clinical picture, for a reduction in the titer of the reaction may be a favorable as well as an unfavorable sign. Although the reaction has limitations, the author considers it a valuable addition to the diagnostic and prognostic methods.

Medizinische Klinik, Berlin

30: 757-788 (June 8) 1934

*Painting with Chloroform in Dermatoses. V. Klingmüller.—p. 761.
*Chemical Exclusion of Surgically Exposed Peripheral Vascular Sympathetic (Sympathicodiaphtheresis) and Its Indications. K. Doppler.—p. 762.
Treatment of Postoperative Tetany with A. T. 10. H. Wendt and E. Altenburger.—p. 765.
Aortic Gymnastics. L. Roemheld.—p. 767.
Newer Studies on Radiation of Organisms. W. Stempell.—p. 769.

Painting with Chloroform in Dermatoses.—Klingmüller noticed that painting with chloroform has a drying effect on the skin. In this respect it far surpasses benzine or ether. Moreover, it also has a certain bactericidal and fungicidal action. The author decided to try chloroform in various cutaneous disorders. In order to render the chloroform more stable, he added 1 per cent of dehydrated alcohol, and, as the excretions of the skin generally have an alkaline reaction, he added a weak acid in the form of from 0.5 to 1 per cent of cinnamic acid. Hoping that the drying effect of the remedy would inhibit the growth of cutaneous fungi, the author decided to try it in the various forms of mycosis of the skin. He obtained good results in pityriasis versicolor, in erythrasma and in the interdigital mycoses. Many cases of suppurating cutaneous inflammations, such as acne and folliculitis, and many eczematous dermatitides likewise responded to this treatment. Surprisingly favorable results were obtained in refractory cases of acne conglobata and in papular forms of acne rosacea. Later, the author tried the chloroform treatment even in chronic inflammatory changes of the skin, such as lupus erythematosus, and he obtained some favorable effects. He thinks that the treatment may be recommended in seborrhea of the face and of the head. The juvenile hard warts also frequently disappeared following painting with the chloroform preparation. An especial advantage of the preparation is that it does not cause discoloration. The chloroform evaporates shortly after the application, while the cinnamic acid remains in the form of crystals. The applications should be made from three to six times daily. The patient should be told to avoid inhalation of the chloroform. In case of open cracks of the skin the chloroform may come in contact with the exposed terminations of the nerves and thereby cause burning pains. However, many patients do not object to this if they will be relieved of the continuous itching.

Chemical Exclusion of Surgically Exposed Sympathetic.—Doppler states that sympathicodiaphtheresis counteracts arterial nutritional disturbances in organs that have been impaired by vascular spasms. He finds that every lesion, induced on any portion of the peripheral sympathetic, reduces the tonus of the sympathetic locally and in the form of a reflex action becomes manifest as a depression in the tonus in other regions. The arterial dilatation is not limited to the comparatively short section of the vessels which has been treated but involves the entire vessel in the central direction and also peripherally; it involves neighboring vessels. Somatic changes set in, which can be interpreted only as the results of a pluriglandular stimulation and which were produced by a reflex transmission of the arterial hyperemia to the vessels of the endocrine glands. In a discussion of the technic, the author employs a 4 per cent aqueous solution of phenol. Whereas formerly he only massaged the vessels with the solution, he has in the last four years combined with it the injection and infiltration of the periarterial tissues. He has discontinued the careful exposure and isolation of the arteries, for the solution penetrates the coats surrounding the arteries. He advises against a detachment of the adventitia as it is performed in Leriche's sympathectomy, for the removal of the adventitia predisposes to the formation of aneurysms and impairs the nutrition of the vascular wall. The attempt to reach superficial arteries by percutaneous injection, however, is inadvisable. The author performed sympathicodiaphtheresis on the common carotid, thyroid, left gastric, lienal and pancreaticoduodenal arteries; also on the vessels of the hepatoduodenal ligament, on the arteries of the meso-ileum and the mesocolon, on the ovarian, uterine, spermatic, external iliac and femoral arteries and on the hypogastric plexus. He describes the technic of these interventions and discusses the indications for sympathicodiaphtheresis. He stresses its value in endocrine disturbances and mentions various other conditions in which the procedure proved helpful.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

97: 65-128 (May) 1934

Congenital Skin and Bone Defects of Vault of Cranium. H.-E. Scheyer.—p. 65.
Schloffer's Tumor. Luise-Lotte Horn.—p. 71.
Influence of Process of Birth and of Obstetric Operations on the Newborn. K. Burger.—p. 75.
*Potassium and Calcium Content of Blood in Course of Menstrual Cycle. A. Schepetinsky.—p. 83.
Rare Gynatresia. K. Holzapfel.—p. 89.
Closure of Vulva by Burns. K. Holzapfel.—p. 92.

Potassium and Calcium Content of Blood in Women.—Since certain symptoms of menstruation have been explained by an increased irritability of the parasympathetic nervous system, Schepetinsky decided to determine the action of the various phases of the menstrual cycle on the calcium and potassium content of the blood serum. He concludes that every laboratory has to develop its own potassium and calcium standard. He was unable to detect a menstrual vagotonia. He maintains that the fluctuations that occur during menstruation in the calcium content are negligible and remain within normal limits. The increase in the calcium content to the limit of normality during the premenstrual period and the decrease in the potassium are individual and have no relation to the constitution.

97: 129-188 (June) 1934. Partial Index

*Weltmann's Coagulation Band in Inflammations of Adnexa. F. G. Purper.—p. 138.
Action of Hormone of Anterior Lobe of Hypophysis on Nonfunctioning Ovaries of Women. R. A. Tschertok and G. W. Penkow.—p. 146.
Almost Full-Term Interstitial Pregnancy. H. Tietze.—p. 153.

Weltmann's Coagulation Band in Inflammations of Adnexa.—By means of Weltmann's coagulation test, Purper tested the serum of fifty-three women having adnexitis. The total number of tests was 173. They were made after weekly intervals, and their results were compared with the other signs of inflammation. In severe cases of adnexitis the author observed a considerably narrower coagulation band, while in mild cases the reduction was less. Changes in the inflammatory condition were accompanied by changes in the coagulation band. Moreover, there is parallelism between the coagulation band, the blood sedimentation and the number of leukocytes. Occational divergences between the three reactions are due to the nature of these reactions. The author thinks that Weltmann's coagulation test is a valuable addition to the methods for exact diagnosis and prognosis of adnexitis. He considers it especially valuable in determining the advisability of an operation in case of inflammatory tumors of the adnexa, and he advises its use before curettage, in order to guard against flaring up of an adnexitis. In patients having menorrhagia the test should likewise be made before curettage.

Monatsschrift für Kinderheilkunde, Berlin

60: 1-80 (May 18) 1934

*Changes in Size of Liver in Nursling Toxicoses. Anna von S. Szász. —p. 1.
Epidemiology of Scarlet Fever in Bratislava (Pressburg). A. J. Chura and S. Limbacherová.—p. 9.
Chloride Analysis of Organs in Young Dogs. G. Török and L. Neufeld. —p. 20.

Size of Liver in Nursling Toxicoses.—Szász shows that in mild and medium severe toxicoses a protective "hepatic blockage," a swelling of the liver, sets in. The liver becomes enlarged and soft. Following administration of hypotonic solutions of sodium chloride, the blood becomes thinner, the organism becomes detoxicated and the liver again attains normal size and consistency. Cases of toxicosis, in which the hepatic blockage is absent and the liver is small and thin, are rather severe. The erythrocytosis resulting from inspissation of the blood may precede the toxicosis by several hours or even days. In cases of severe nutritional changes, the number of erythrocytes is important and can serve as an early guide in the selection of the diet and the therapeutic measures. The secondary parenteral disturbances resulting from metabolic disorders are characterized by a high number of erythrocytes, and, if fasting is instituted early and large amounts of fluids are administered, a rapid cure may be obtained.

Münchener medizinische Wochenschrift, Munich

81: 853-890 (June 8) 1934. Partial Index

Reform of Medical Studies. F. von Müller.—p. 853.
Defects and Mistakes in Education of German Physician. H. Kritzler-Kosch.—p. 861.
Presence of Corpus Luteum Hormone in Placenta. K. Ehrhardt.—p. 869.
*Epicondylitis Humeri (Tennis Elbow) and Other Periostalgias. K. Boshamer.—p. 870.
Suppurating Meningitis Caused by Influenza Bacilli. M. Kasper.—p. 871.
*"Secondary Vibration," a New Percussion Symptom in New and Old Disturbances of Vertebral Column. A. Stalmann.—p. 873.

Tennis Elbow.—According to Boshamer, tennis elbow is due to an irritation of the periosteum of the lateral epicondyle of the humerus and is often limited to the lower edge of the epicondyle. If it exists for longer periods, periosteal deposits may become roentgenologically demonstrable. The median epicondyle is rarely involved. The cause is either a single direct trauma of the epicondyle or a continuous overexertion of the group of muscles attached to the epicondyle. The condition is frequent in persons who overexert these muscles, such as tennis players, cobblers, glass blowers, cabinetmakers, riveters, tinsmiths and washerwomen. Observations on forty cases convinced the author that the direct single trauma is more often the eliciting factor than the chronic irritation. The epicondylitis is characterized by a sensitivity to pressure of the region of the epicondyle, by a piercing and burning pain in the same region when the arm is stretched at the elbow joint to more than 160 degrees, and by radiation of the pains into the upper and lower arm and even into the fingers. Myalgia frequently coexists with the epicondylitis, and it is surprising that it frequently involves the antagonistic group of muscles; that is, the flexors. A circumscribed edema is present rarely. The main object of treatment should be to eliminate irritation of the periosteum; that is, every exertion of the extensor muscles attached to the epicondyle. A splint is applied to the upper arm and forearm while the elbow is bent at a right angle. Care must be taken that the wrist joint and the fingers are completely extended, but, if the median epicondyle is involved, hand and fingers should be bandaged in the flexed position. To be able to influence the periosteal irritation with diathermy or with ointments that induce hyperemia, the author prefers the use of plaster-of-paris splints that are fenestrated in the region of the epicondyle. Immobilization should be continued for three or four weeks. Hohmann's operation may be resorted to, because it produces results in a comparatively short time. Under local anesthesia an incision 3 cm. in length is made over the epicondyle. The musculature on the anterior and lower rim of the epicondyle is notched. Then the cutaneous wound is closed. The after-treatment consists of a splint bandage left on for only about ten days. This operation was resorted to (1) in case of long duration of the disorder, (2) when the disorder was caused by the occupation of the person, and (3) when the conservative treatment failed. In the majority of cases the conservative treatment will bring the desired results. Similar conditions mentioned by the author are epicondylitis of the femur and tibia, periostalgia of the spinous processes of certain vertebrae, radial styloiditis and pressure periostalgias.

"Secondary Vibration" in Disturbances of Vertebral Column.—Roentgenoscopy occasionally fails in the diagnosis of disorders of the vertebral column, particularly in anterior spondylitis. To find a more objective clinical method, Stalmann employs the percussion of the spinous processes. Percussion of the vertebral spinous processes of a healthy person results in the "secondary vibration" of the subsequent and previous vertebrae. This secondary vibration is determined best by laying the tips of the index and middle fingers on the apexes of the preceding and subsequent vertebrae while the other hand strikes the vertebra in between with a rubber hammer. The sound is not considered, but the touch detects the vibration. The vibration is more clearly perceived if the patient is lying face down, preferably over a bolster, or if he is in the knee-elbow position. When the examiner reaches a vertebra with spondylitic changes, the secondary vibration becomes considerably reduced or entirely abolished. However, if the spondylitic process has ceased and ankylosis has developed, the secondary vibration is again elicitable and, when the ankylosis has resulted in block formation, the secondary vibration becomes even more pronounced than it is in the healthy portions of the vertebral column. Thus "blocking" can likewise be detected with this method. Great intensity of the secondary vibration is found in spondylitis deformans and also in congenital blocking of several vertebrae.

Wiener klinische Wochenschrift, Vienna

47: 705-736 (June 8) 1934

Which are the Most Important Requirements of Race Hygiene? H. Reichel.—p. 705.
*Specific Vaccine Therapy and Allergic Reactions of Actinomycosis. E. Neuber.—p. 708.
Apparent Spontaneous Cures of Renal Tuberculosis. N. Moro.—p. 710.
Dyestuff Resorption from Digestive Tract and Gastric Ulcer. J. Goldstein and S. Erber.—p. 712.
*Rapid Culture of Diphtheria Bacilli. A. Solé.—p. 713.
*Admissibility of Blood Transfusion in Panagglutination. O. Lewin. —p. 714.
Condition of Sympathetic Nervous System in Chronic Polyarthritis. L. von Buday and J. von Fernbach.—p. 717.
Surgical Treatment of Diseases of Biliary Passages. E. Ranzi.—p. 719.
*Early Diagnosis of Carcinoma of Female Genitalia. L. Adler.—p. 723.

Specific Vaccine Therapy of Actinomycosis.—Neuber reports the case of a man, aged 27, who had abdominal actinomycosis. The intracutaneous vaccinations with specific vaccine resulted in specific allergic local, focal and general reactions, while the control vaccinations with physiologic solution of sodium chloride were negative, as were also the specific vaccine injections of control persons. The specific vaccine therapy was effective. The patient recovered after ten injections. The vaccine was administered in doses beginning with 0.1 cc. and gradually increasing to 0.9 cc. The intervals between injections were four or five days. In the course of this treatment the infiltrates became resorbed, the fistulas closed and the patient gained weight, so that he could be discharged as cured. Autovaccines or at least polyvaccines should be used. The vaccine is prepared from maltose agar cultures. When they are from three to four weeks old they are washed off with 5 cc. of a sterile solution of sodium chloride. This suspension is subjected to trituration for about fifteen minutes and is filtered and 0.5 per cent phenol is added. It is stored in the icebox. The polyvalent vaccines are prepared from four or five different strains.

Rapid Culture of Diphtheria Bacilli.—According to Solé, it was Folger who perfected a rapid culture method of diphtheria bacilli more than thirty years ago, but the method did not become known to the general medical public. The procedure is as follows: A sterile swab on a holder, as is used for taking smears from the pharynx or nose, is dipped into sterile horse serum (free from disinfectant) until saturated. The swab is pressed out against the side of the bottle and then it is turned over a flame until vapors develop and the serum-saturated surface appears slightly coagulated. The author employs horse serum, while Folger employed beef serum. The swab thus prepared is passed over the fauces or into the nose of the patient. Then the swab is put into a sterile glass tube and placed in the incubator. The author emphasizes that the

swab should be prepared immediately before the smear is taken. Folger originally took the culture swab from the incubator after four hours, scraped the micro-organisms that had grown on the swab onto a slide and examined them with the microscope. Later he reduced the incubation to three hours, and the author found that in 80 per cent of the cultures a two hour incubation was sufficient; but, after taking some of the culture after two hours, he puts the swab back into the incubator and after another two hours examines the rest of the culture. Simultaneously with the preparation of the culture swab, another smear is taken and, after staining, is immediately examined. The usual Löffler culture was made in all cases as a control and was examined after eight and after thirty-six hours. These control tests corroborated the results of Folger's rapid method in all cases. As stated, a diagnosis was possible in most cases after two hours.

Admissibility of Blood Transfusion in Panagglutination.—The case reported by Lewin raised the question whether it is permissible to give a blood transfusion to a patient with panagglutination. This case came to necropsy. A patient with a hepatolienal syndrome and splenomegaly was to be prepared for an operation by a blood transfusion. The determination of the blood group revealed autohemagglutination. The blood group O could not be determined until after elimination of the erythrocytes. The patient was given an infusion of 500 cc. of blood of the same group and he tolerated it well, for there were no complications of any kind. On the following day, in connection with the splenectomy, there was a hemorrhage from the hilus vessels, which resulted in death five hours after the operation. The postmortem examination revealed the same manifestations of hemagglutination of the blood in the vessels and of the blood that had accumulated in the abdominal cavity as those noted in the determination of the blood group. The clinical course as well as the histologic examination disclosed no symptoms that could have been ascribed only to panagglutination. The author concludes that the status of the blood found on necropsy proves that the panagglutination is a cold agglutination and that, when the body becomes cold after death, the same processes take place as in vitro in the group determination. He maintains that the transfusion of blood of the same group is permissible in cases of panagglutination.

Diagnosis of Carcinoma of Female Genitalia.—Adler discusses the symptoms of carcinoma of the vulva, vagina, uterine cervix, uterus, uterine tubes and ovaries and reaches the conclusion that early diagnosis is difficult in nearly all carcinomas of the female genitalia, because (1) pains set in comparatively late, and patients as a rule do not consult a physician until pains are felt; (2) hemorrhages are not given sufficient attention or the women hesitate to consult a physician during the time of bleeding; (3) it always requires a certain lapse of time until a genital carcinoma shows any symptoms at all (latent period). Thus it is not entirely the fault of the physician or of the patient that so small a percentage of genital carcinomas is recognized during the beginning stages. The author thinks that a gynecologic examination after regular intervals would probably be a solution of this problem. In younger women such an examination should be made once a year or at least once in two years. In women near the menopause, the examination should be made every six months.

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*Contribution to Study of Bone Transplant. H. Camitz, H. Holmgren and H. Johansson.—p. 1.
Operation in Case of Splenic Torsion in a Male Patient. O. Linden.—p. 68.
Late Result of Antethoracic Plastic Operation on Esophagus. O. Lundblad.—p. 73.
Longitudinal Growth of Bones and Transplantation of Epiphyseal Cartilages. N. Silfverskiöld.—p. 77.
*Cholecystography. J. Foged.—p. 105.
Results of Experiments with Extra-Articular Arthrodesis in Hip Joint Tuberculosis. R. Euren.—p. 129.
Experimental Study of Pyelovenous Reflux. C. G. Ahlström.—p. 162.
Chondromatosis of Metacarpophalangeal Joint: Case. O. Linden.—p. 180.

Study of Bone Transplant.—Camitz and his associates transplanted homologous fragments of the radius in seventeen dogs. The bony fragment with its periosteal covering was transplanted from the right radius to the left and vice versa. The animals were killed after periods of from forty-eight hours to 196 days. The histologic sections were stained with Hansen's iron trioxyhematin-fuchsin S. or with hemotoxylin-eosin. It was found that a reaction in the periosteum of the graft is observable after seventy-one hours. After five days the proliferating connective tissue surrounding the graft assumes the character of a connective tissue callus and unites with the collagenous trabecular structure (myelogenous callous tissue) simultaneously developing from the endosteum of the host's bone. Periosteal callous tissue begins to form after another five days. While the connective tissue callus assumes more and more the character of a bony callus, the myelogenous callous tissue undergoes a powerful development within the marrow cavity and a periosteal callus develops close to the defect in the host's bone and opposite this area. The myelogenous callus disappears after forty-two days, but the periosteal callus persists. Definite degenerative alterations are present in the periphery of the graft after sixty days. At the same time the callous tissue inside the bony defect assumes more and more a definite lamellated bony structure and the periosteal callous tissue begins to break down. The authors believe that some parts of the graft are reformed during the process of union in this manner, while other parts retain their original structure. As the process of union of the graft progresses, the latter gradually assumes a definite lamellar bony structure. After 196 days there is little left of the original periosteal bony deposits. The osteoclasts appearing as the result of breaking down of the bone tissue can be seen on the surface of the graft after seven days. They may be observed 196 days later below the periosteum in areas in which the periosteal deposits are still present. Häggqvist's view of osteoclasts as secondary elements constituting the end result of osseous protoplasm deprived of calcium salts and collagen seems to be verified by the authors' observations. The periosteum and endosteum of the graft do not play a prominent part in the regeneration of the bone, though their presence and their vascular supply appear to be of great importance for an ideal union. A compact bone portion of the graft is retained for the most part. It will ultimately stimulate the surrounding tissues to new bone formation.

Cholecystography.—Foged reports 401 cholecystographic examinations made on 388 patients to whom 3 Gm. of tetiothalein sodium (iodotetragnost) was given either orally or intravenously, according to the method of Sandström. In ninety-seven normal persons without symptoms referable to the liver or the biliary tract, a normal cholecystogram was obtained in ninety-one, while in six there was absence of the shadow of the gallbladder. In 214 cases of cholelithiasis and cholecystitis pathologic cholecystograms were obtained in 191 and normal shadows of the gallbladder in twenty-three. Cholecystography in this group established a clear diagnosis in 30 per cent of the cases and was helpful in arriving at a diagnosis in 90 per cent. The author states that more than 80 per cent of normal cholecystograms are obtainable from persons without liver or biliary tract disease. A normal cholecystogram does not definitely exclude the existence of pathologic alterations in the biliary tract. A pathologic cholecystogram indicates a disease of the liver or the biliary tract in 90 per cent of the cases, but a pathologic cholecystogram may be obtained from a person not suffering from any disease of the liver or the gallbladder.

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*Observations Concerning Poisoning from Food in Office Building, Nov. 10, 1933. R. Huss and B. Lindström.—p. 305.

Poisoning from Food.—Serologic examinations made by Huss and Lindström showed that the intoxication which affected about fifty persons who had eaten in the lunchroom of a railway office building on the date in question was probably an acute intestinal disorder due to dysentery bacilli of the Kruse-Sonne type, the source of infection being sliced boiled ham that had been contaminated by an infected food handler.